40 FOOT CONTAINER ROLL OUT WAREHOUSING SYSTEM (CROWS) USER MANUAL

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SAFETY WARNINGS

Operators involved in moving, stacking, loading or unloading CROWS should be suitably qualified and experienced, and wear appropriate approved Personnel Protective Equipment (PPE)

It is recommended that the following items should be worn:

- Appropriate long sleeved shirts, and long pants
- Steel capped boots
- Suitable gloves
- Safety glasses
- Hard hat

Failure to follow the warning may result in serious injury to personnel.

Suitable **Material Handling Equipment (MHE)** must be used to move, load, unload and stack CROWS. Key safety requirements include:

- The MHE has to be rated and capable of lifting the Maximum Gross Weight (MGW) of CROWS, including secured load.
- The MHE needs to have appropriate lifting tines to suit the CROWS tine pockets.
- All moving, loading and unloading activities need to be carried out on suitable level, even and compacted surfaces.
- Particular attention is needed when moving, loading and unloading stacked CROWS assemblies to ensure MHE is capable of handling total gross weight of stack.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

When **loading and unloading CROWS** ensure all personnel stand clear of the CROWS and the Container, in particular operators/spotters must ensure that they:

- Do not stand between the CROWS and the shipping container during loading.
- Do not extend any part of the body under a suspended CROWS platform.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

The CROWS must only be **loaded** up to the maximum permissible payload, depending on stacking arrangement as specified in this manual.

Loads must be evenly distributed across the CROWS deck surface.

Loads must be secured using suitable rated and certified load restraint equipment, and only secured to the CROWS using the certified tie-down points as marked on the CROWS platform.

Tie down rails are provided along both sides of the CROWS and are capable of restraining up to 3.8 tonnes, per load restraint bay. Ensure only one restraint is applied to each tie rail bay.

Failure to comply may result in severe injury to personnel or damage to equipment.

Before **moving or loading CROWS** as a nested configuration, the operator is to confirm that all interfacing twist locks are positively engaged.

Always lift a stacked or nested CROWS via the base CROWS, either by overhead MHE or forklift.

Double stacking 40 foot CROWS on a truck or trailer using CROWS Claws is not permitted.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

Stacked CROWS for transportation or warehousing shall have heavier loads on the lower levels.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

The **CROWS end forklift pockets are not to be used for lifting the CROWS**. The tine pockets provided at the end of the CROWS is for Roll in/Roll out loading and unloading into a 40ft shipping containers.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

If at any time the CROWS legs cannot be fully tightened i.e. the leg is loose after fully tightening the bolt, the legs have been damaged and must be repaired or replaced.

Four high stacking with 4 foot legs is not allowed, maximum warehousing for 4 foot legs is 3 high.

The use of 4 foot legs is not permitted in all configurations, please see Chapter 1: 40 foot and 20 foot Configurations for more detail.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

FOREWORD

Authority

Sea Box Inc. (SBI) is the Design Authority for the Container Roll Out Warehousing System (CROWS). For safety purposes, this manual is a controlled item and as such is not to be modified or altered in any way. Any suggested improvements relating to design, functionality or operating procedures are actively encouraged. Any such suggestions or notifications are to be sent to: info@seaboxintl.com.au or (02) 6162 2826

Manual Currency and Version Control

Updated versions of this manual will be available on requests sent to info@seaboxintl.com.au. SBI will make best endeavours to ensure that SBI – CROWS customers are updated with subsequent versions of this document.

Manual Layout and Applicability

This manual is divided into two sections:

Chapter 1: Description and Tabulated Data. This section provides familiarity with the equipment and provides specification data intended to assist users conduct operational planning.

Chapter 2: Operating Instructions. This section provides instruction on:

1. Preparation for use
2. Assembly
3. Loading
4. Unloading
5. Warehousing
6. Servicing

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CHAPTER 1 DESCRIPTION AND TABULATED DATA

Introduction

7. The 40 foot Container Roll Out Warehousing System (CROWS) is an ISO shipping container derivative that provides a Roll in/Roll out capability to load problematic cargo into ISO shipping containers, in particular for logistics operations into environmentally controlled areas. It also provides an expedient warehousing system such that loads can be removed from containers and efficiently stored, and ready for subsequent redeployment.

40 Foot CROWS Description and Layout

8. The layout of a 40 foot CROWS platform, including its major components is shown in Figure 1 and 2 below.

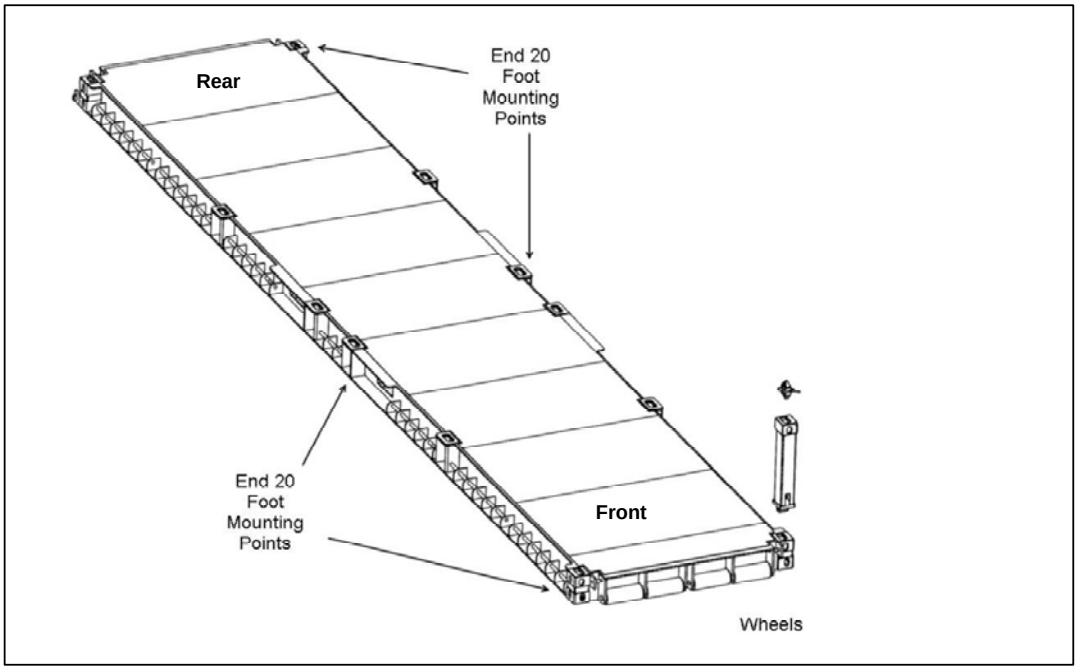


Figure 1: 40 Foot CROWS Front View

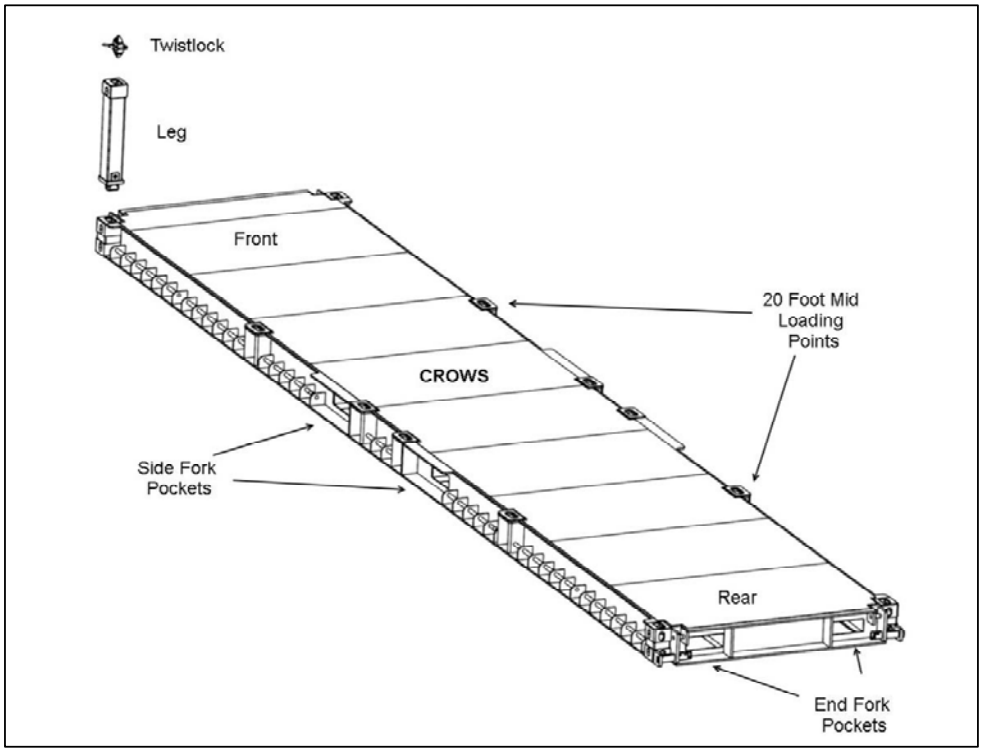


Figure 2: 40 Foot CROWS Rear View

Deployment Configurations

9. The 40 foot CROWS is designed to deploy in the following configurations:

   a. Single unit loaded into the container: this configuration provides for the transport of large bulky items that fill a significant percentage of the containers storage capacity.

   b. Double Stacked unit loaded into the container: this configuration is designed to accommodate smaller loads, and provide a mechanism to optimise load space available in the container and as such reduces logistics overheads. The 40 foot CROWS are compatible with the 20 foot CROWS resulting in multiple stacking configurations, shown in Figure 7 through Figure 11.

   c. Nested units loaded into the container: This configuration provides the ability to nest several CROWS platforms and effectively deploy the modules into an operational environment.

   d. Warehousing configuration: this capability provides an expedient storage system. It is intended to minimise the environmental footprint required to establish lay-down areas and storage yards. It is also intended to be a mechanism in which project stores can be effectively located and redeployed. It should also be noted that this warehousing dynamic includes storage and stacking in containers (for items that require protection from the elements). In this case the CROWS platform provides rapid deployment out of the warehoused containers.

10. Figures 3 through Figure 11 provide an illustrated representation of CROWS configurations.

Figure 3: Single 40 foot CROWS Load

Figure 4: Double Stacked 40 Foot CROWS Loaded

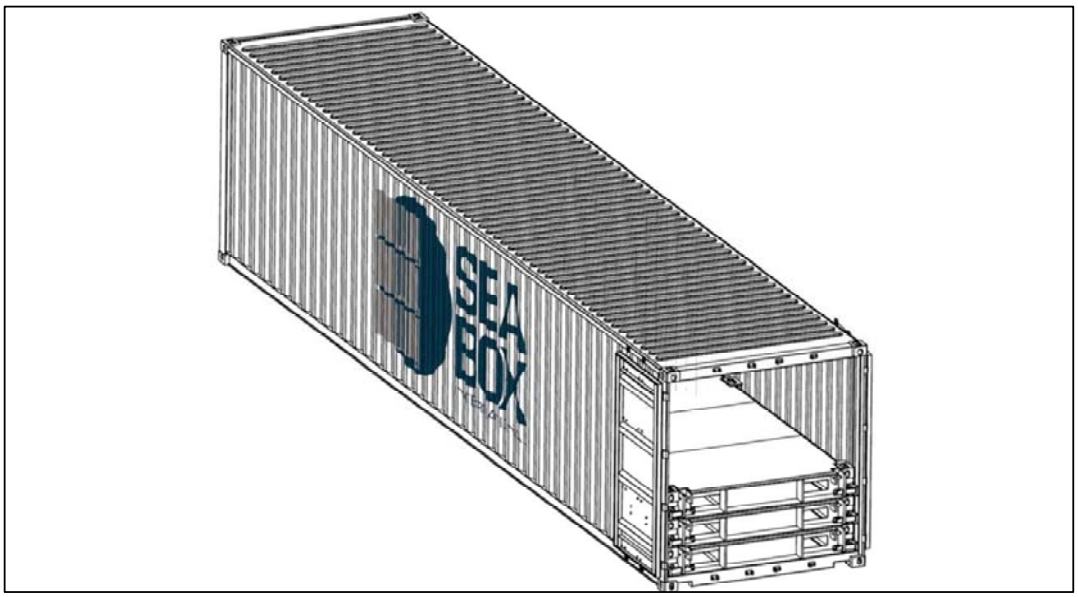


Figure 5: Nested 40 Foot CROWS Loaded

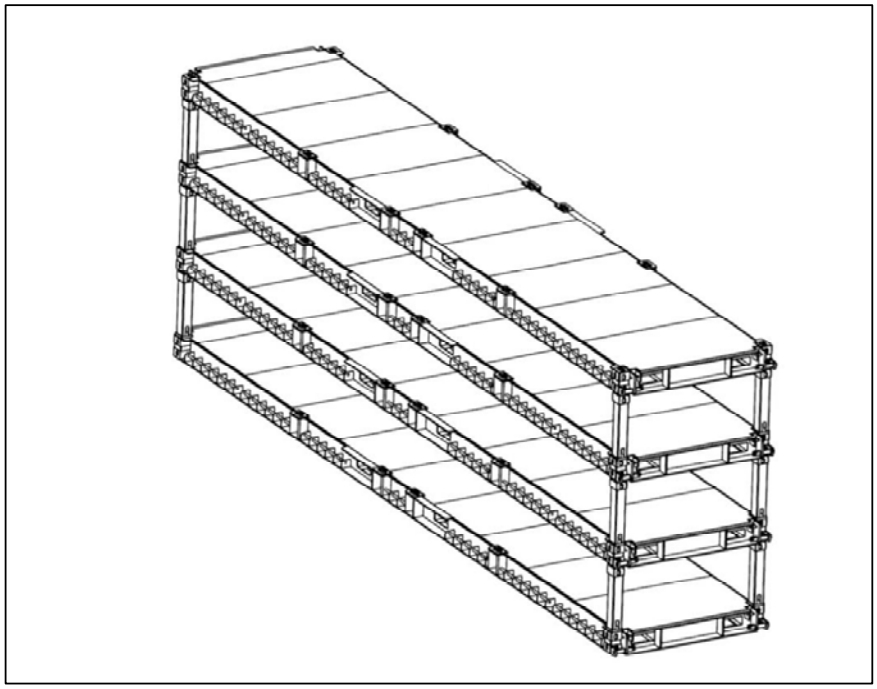


Figure 6: Stacked 40 Foot CROWS Warehousing Configuration

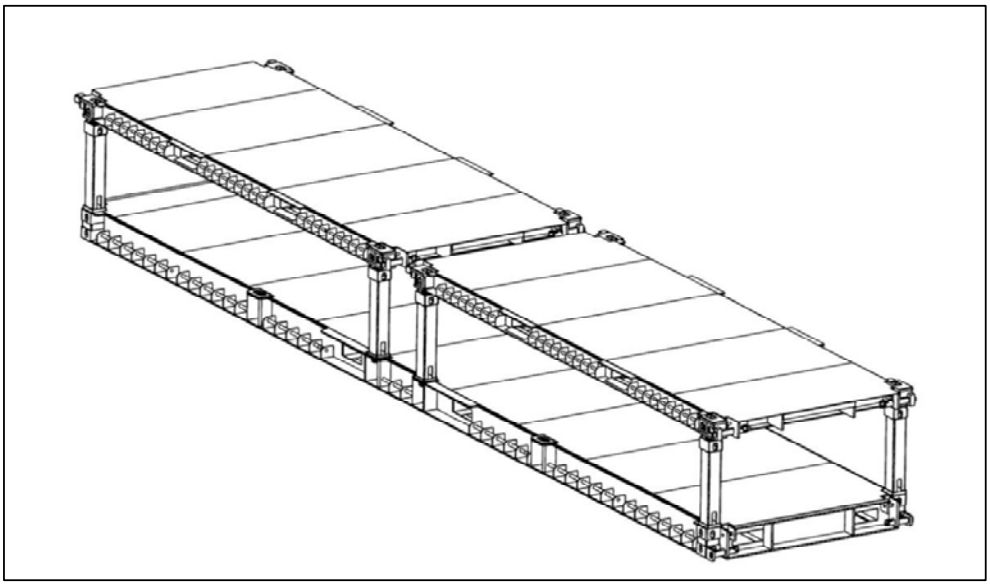


Figure 7: Two End Stacked 20 foot CROWS

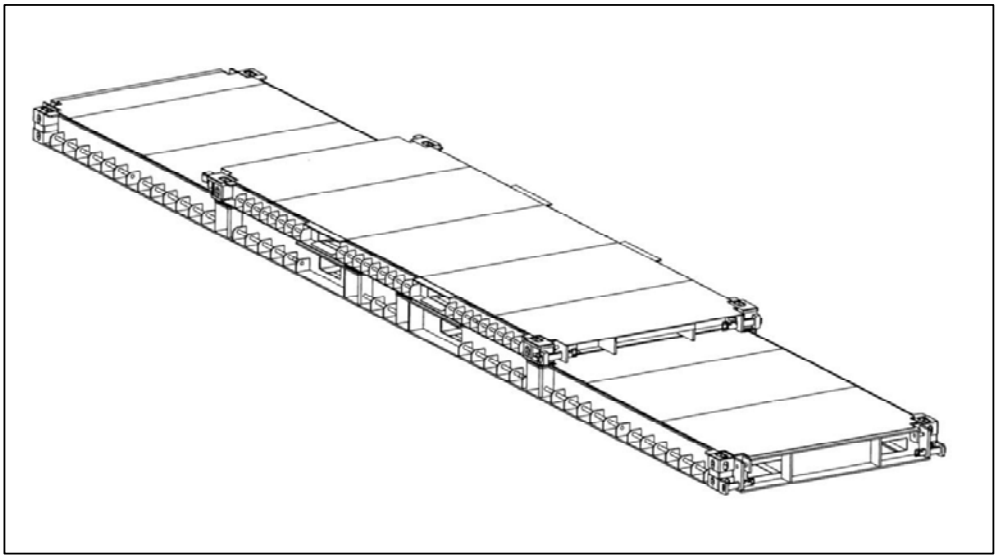


Figure 8: Centre Nested 20 foot CROWS

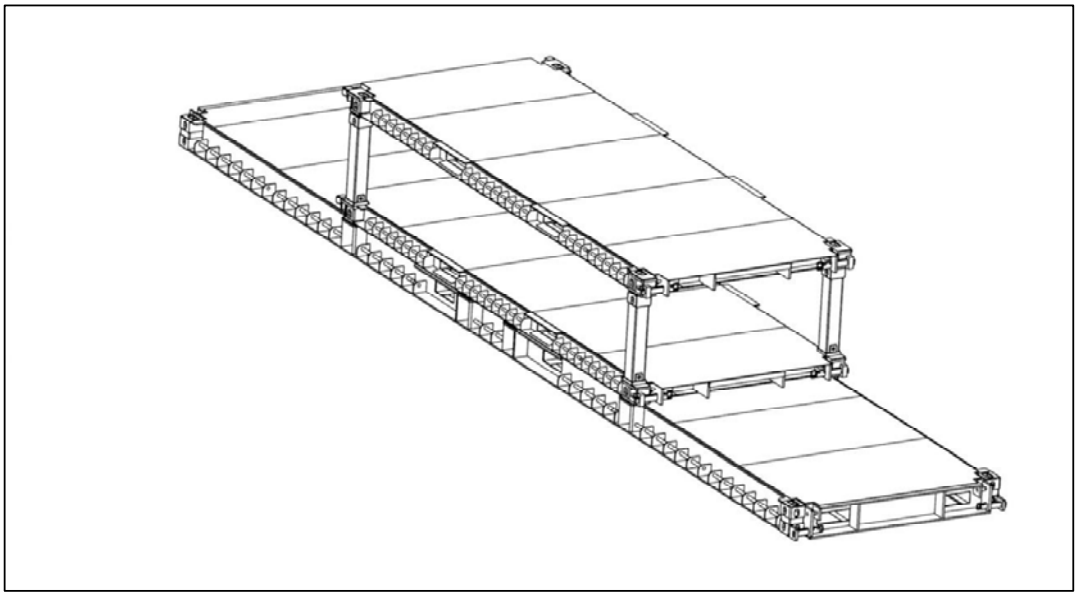


Figure 9: Centre Nested 20 foot CROWS Stack

Note: triple stacked is allowed using 1 and 2 foot legs only as per the payload restrictions in Table 5

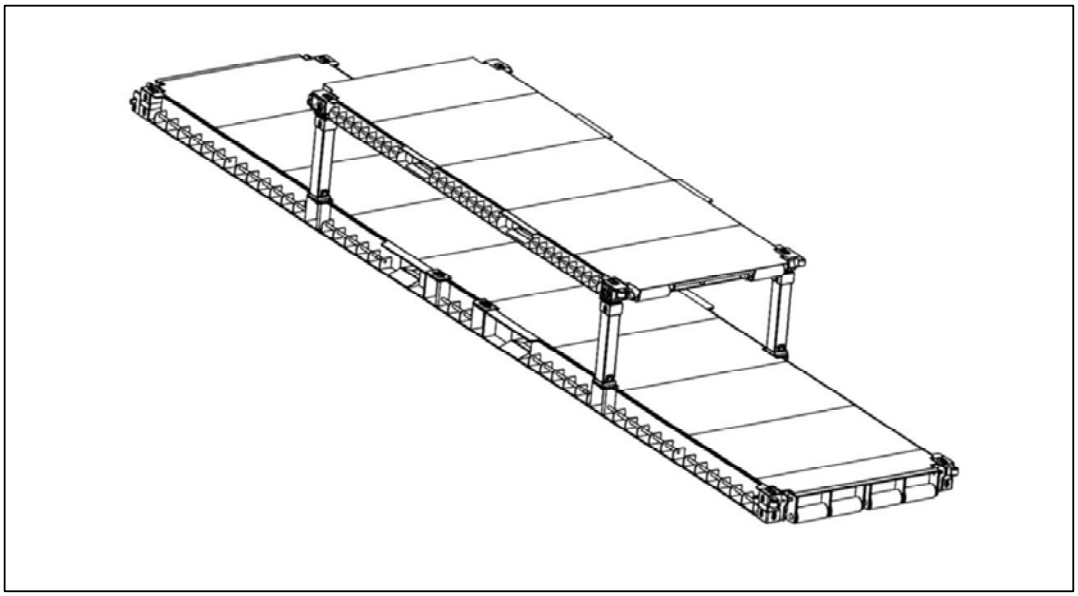


Figure 10: Centre Stacked 20 foot CROWS

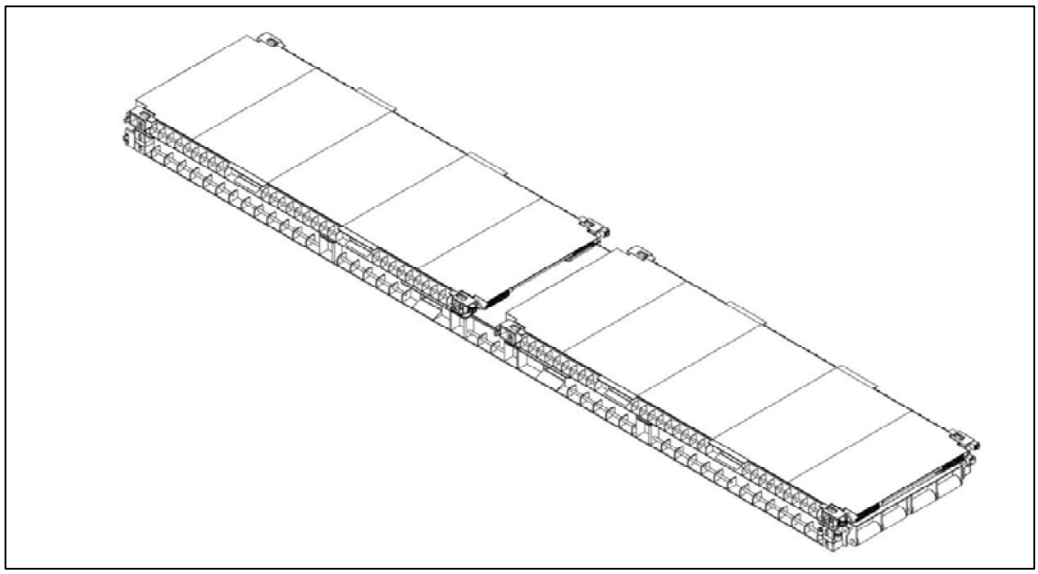


Figure 11: Two End Nested 20 foot CROWS

Characteristics and Tabulated Data

11. The purpose of this section is to outline the specific dimension, weights and capabilities of the 40 foot CROWS. Additionally it defines key capabilities and restrictions relating to the use 40 foot and 20 foot CROWS in specified configurations. Table 1 below details the specification of a single CROWS.

Table 1: CROWS Specifications

Single CROWS Specifications	
Characteristics	Dimension (mm)
Width	2296
Length	11929
Height	304
Characteristics	Weight (kg)
Tare Weight	5,250
Maximum Payload (including tie down equipment)	15,000
Maximum Gross Weight (MGW)	20,250

12. Table 2 below shows the specifications of the 40 foot CROWS when double stacked CROWS are being used for moving and transportation using 1, 2 and 3 foot legs inside a container only. Heavier loads must be on the bottom CROWS.

Table 2: Double stacked CROWS Specifications for Moving and Transportation Inside a Container

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)	Maximum Payload of the top CROWS (kg)	Height (mm)
Double Stacked	10,700	9,550	20,250	4,775	1533

40 Foot and 20 Foot Configurations

13. This section details the variety of configurations of 40 foot CROWS with 20 foot CROWS.

Two 20 Foot CROWS End Stacked

14. This section details the payload limitation for the configuration shown below in Figure 12. The maximum payloads when using 1, 2, 3 and 4 foot legs are shown in Figure 12 and detailed in Table 3.

All 20 foot CROWS stacks using 4 foot legs must be situated at the door end with the locking bar engaged for transport.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

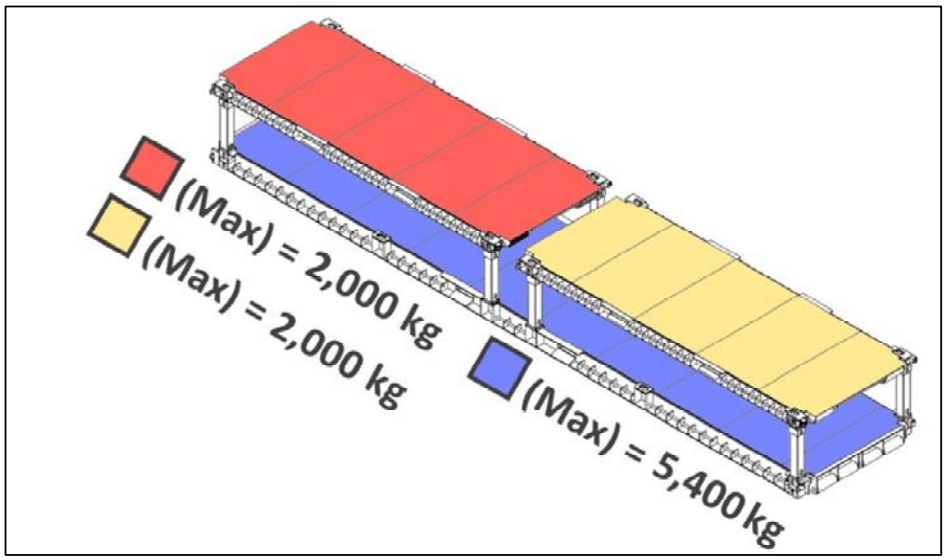


Figure 12: Two CROWS End Stacked

Table 3: Two 20 foot CROWS End Stacked

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)
40 foot CROWS with two 20 foot Stacked	5,250	5,400	19,450
Each 20 foot CROWS when stacked	2,200	2,000	4,200

Double Stacked 20 foot CROWS Centre Mounted

15. This section details the payload limitation for the configuration shown below in Figure 13. Figure 13 illustrates the maximum payloads for 1, 2 and 3 foot legs.

WARNING
Stacks using 4 foot legs are not permitted in this configuration
Failure to comply may result in severe injury or death to personnel and damage to equipment.

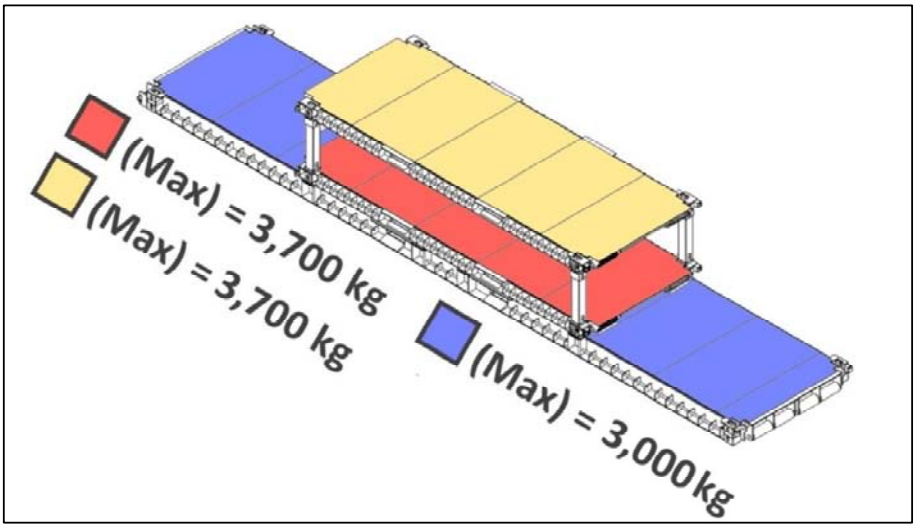


Figure 13: Centre nested 20 foot CROWS Stack

Table 4: Double Stacked 20 foot CROWS Centre Mounted Payloads

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)	Top 20 foot CROWS Maximum payload
40 foot CROWS with center mounted double stacked 20 foot CROWS	5,250	3,000 (total)	20,250	-
Double Stacked 20 foot CROWS	4,600	7,400	12,000	3,700kgs

Note: For a single 20 foot CROWS nested at the centre mounted as shown in Figure 8 the maximum payload of the 20 foot CROWS is 9,800kgs. The 40 foot CROWS remaining payload is 3,000kgs total.

Note: Weights of the double ended twist-locks are not included in the tare weight.

16. Triple stacks of 20 foot CROWS can be centre mounted using 1 and 2 foot legs only, with the payload restrictions detailed below in Table 5.

Table 5: Triple Stacked 20 foot Centre mounted

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)	Each 20 foot CROWS Maximum payload
40 foot CROWS with center mounted Triple stacked 20 foot CROWS	5,250	3,000 (Total)	20,250	-
Triple Stacked 20 foot CROWS	6,936	5,064	12,000	1,688kgs

Single Stacked 20 foot CROWS Centre Mounted

17. This section details the payload limitation for the configuration shown below in Figure 14.

Using the 4 foot legs is not permitted in this configuration

Failure to comply may result in severe injury or death to personnel and damage to equipment.

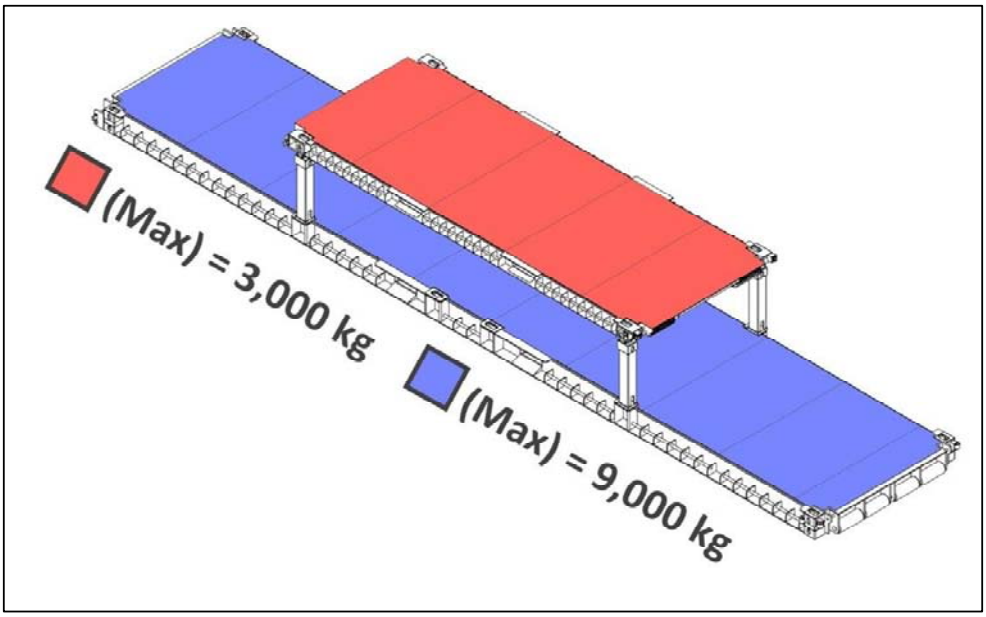


Figure 14: Centre Stacked 20 foot CROWS

Table 6: Centre Stacked 20 foot Specification

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)	Maximum Payload of 20foot CROWS (kg)
40 foot CROWS (3 foot legs)	5,250	9,000	19,650	3,000
20 foot CROWS	2,200	3,000	5,200	3,000

Two Nested 20 foot CROWS

18. This section details the payload limitation for the configuration shown below in Figure 15.

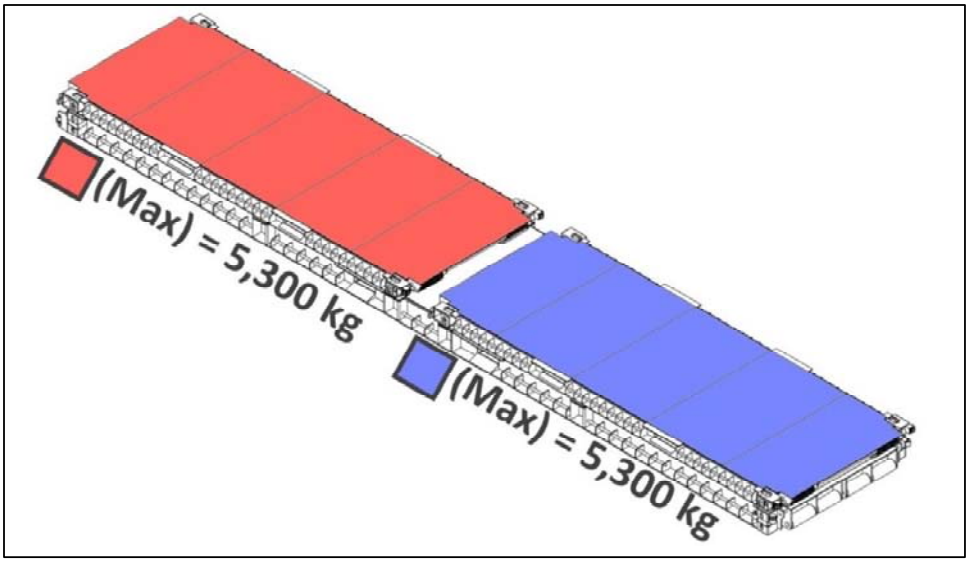


Figure 15: Two Nested 20 foot CROWS

19. Table 7 below shows the specifications for two nested 20 foot CROWS as shown in Figure 15.

Table 7: Two Nested 20 foot CROWS

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)	Height (mm)
40 foot CROWS	5,250	15,000	20,250	510
20 foot CROWS	2,200	5,300	7,500	181

Note: Weights of the double ended twist-locks are not included in the tare weight.

Note: 20 CROWS can be nested double stacked at each end of the 40 foot within the payload restrictions of the base 20 foot CROWS. The payloads for each CROWS in the stack are detailed below in Table 8.

Any 20 foot stacks using 4 foot legs must be situated at the door end of the container with the locking bars engages for transport.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

Table 8: Two Double Stacked 20 foot CROWS payloads

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)	Top CROWS max payload
Double Stacked 20 foot CROWS	4,600	2,900	7,500	1,450

Warehoused 40 foot CROWS

20. This section details the payload limitation for the configuration shown below in Figure 15.

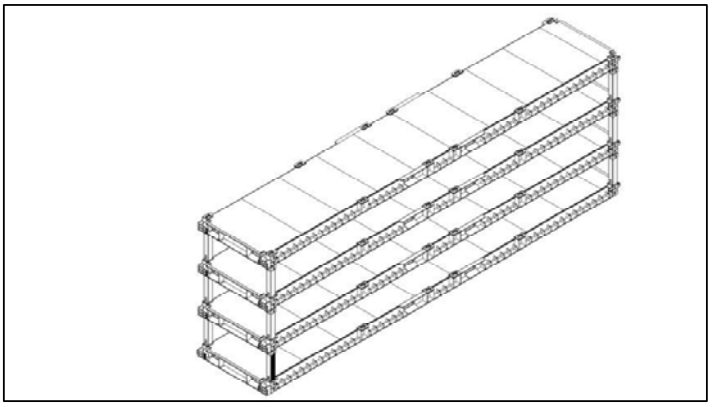


Figure 16: Four High warehoused 40 Foot CROWS

21. Table 9: Warehousing Specifications below shows the allowed weight that can be supported during warehousing in a static environment for 1, 2 and 3 foot legs.

Four high stacking with 4 foot legs is not allowed, maximum warehousing when using 4 foot legs at any level is 3 high with the same payloads as Table 9.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

Table 9: Warehousing Specifications

Configuration	Tare Weight	Maximum Payload (kg)	Maximum Gross Weight (kg)
Base level CROWS	15,000	20,150	
2nd level CROWS in stack	15,000	20,150	
3nd level CROWS in stack	15,000	20,150	
4th level CROWS in stack	15,000	20,150	

Note: When the CROWS are being moved or transported the payload limits of Table 2 to Table 8 apply. When the CROWS are warehoused in a static environment they must be stacked in accordance with the operational procedures outlined in Chapter 2: CROWS Stacking Installation and Warehousing Installation.

22. Table 10 below outlines the different heights and weights of the CROWS legs.

Table 10: CROWS Leg Specifications

Length of CROWS Leg mm (ft)	Weight (kg)
300 (1)	34
600 (2)	42
900 (3)	50
1200 (4)	58

CHAPTER 2 OPERATING INSTRUCTIONS

Introduction

23. The purpose of this chapter is to provide instruction on safe and efficient operating procedures required for the use of CROWS in all configurations. This consists of:

    a. Preparation for use,

    b. Assembly,

    c. Loading,

    d. Unloading,

    e. Warehousing, and

    f. Servicing.

Preparation for use

24. Operators are required to inspect the CROWS before the operation occurs in any configuration. The operator is to conduct a walk around and perform the following checks prior to operation.

Walk Around Inspection

25. The operator is to walk around the CROWS in a path shown below in Figure 17. During the walk around the operator will perform the checks outlined below.

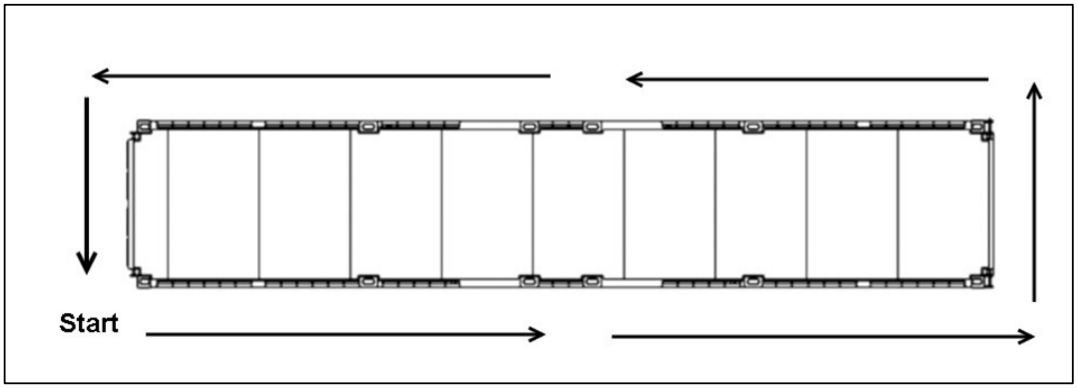


Figure 17: Walk-Around Inspection Path

Tie Down Rail Check

26. Check the tie down rails down each side of the CROWS to ensure they are serviceable as per Table 11.

Table 11: CROWS Tie Down Rail Inspection

Item No.	Interval	Item to Check/Service	Procedure	Not Fully Functional If:
1	Before operation	Tie down rails at each side of CROWS and 2 individual tie down points at front and rear of CROWS.	Visibly inspect CROWS, and check condition of tie down rails to ensure no impact or loading damage is evident, that rails and supports are not excessively bent, and no evidence of damaged welds, or sharp edges.	Tie down rails are bent by more than 5mm, or if not fully secured to supports.

CROWS Mounting and Lifting Points Check

27. Check the CROWS mounting and lifting points to ensure they are serviceable as per Table 12.

Table 12: CROWS Mounting Lifting Points Inspection

Item No.	Interval	Item to Check/Service	Procedure	Not Fully Functional If:
2	Before operation	Twist lock mounts	Visibly inspect each of the four twist lock mounting plates, at each corner of the platform, to ensure the mounting plate opening is free of debris, and is not deformed or bent. If only debris, clean as required.	Twist lock mounting openings are bent or obstructed with debris.
3	Before operation	Corner castings	Visibly inspect each of the four corners casting at each lower corner of the platform, to ensure the castings are not bent or damaged and that the opening is free of debris or any obstacles. If only debris, clean as required.	Corner castings are bent or obstructed with debris.
4	Before operation	Tine pockets	Visibly inspect each of the four tine pockets to ensure they are free of damage, including: split or torn metal sections, damaged or split welds	Tine pockets have any damage more than superficial denting of plate surfaces

CROWS Rollers Check

28. Check the CROWS Rollers as detailed in Table 13.

Table 13: CROWS Rollers Inspection

Item No.	Interval	Item to Check/Service	Procedure	Not Fully Functional If:
5	Before operation	Rollers	Ensure each roller will rotate. (Can only be inspected with CROWS elevated) Visibly inspect each roller to ensure it is not defaced or so out-of-round that it will not roll properly.	Either roller is excessively worn, split, or defaced that proper loading into 40ft ISO container is not possible.

CROWS Deck and Underside Plating Check

29. Check the CROWS deck as detailed in Table 9 below.

Table 14: CROWS Deck and Underside Plating Inspection

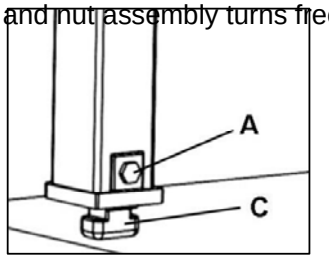
Item No.	Interval	Item to Check/Service	Procedure	Not Fully Functional If:
6	Before operation	Load deck and lower CROWS plating	a. Visibly inspect load deck to ensure that the metal plating is not deformed, ripped or torn and that all welds are intact and not split. b. Visibly inspect the metal plating protecting the underneath of the CROWS frame to ensure it is not deformed, ripped or torn and that all welds are intact and not split. Ensure that all joint sealant is intact and not worn away or impact damaged.	a. Load deck is ripped or torn so that material or water can enter the frame of the CROWS. b. Lower metal plating is ripped or torn so that foreign material or water can enter the frame of the CROWS. c. Joint sealant compound on lower frame plating joints is worn away or not visible to the point that protection from foreign material or liquids is compromised.

CROWS Legs Check (If posts are used)

30. Check the CROWS Legs as detailed in Table 15, the inspection process is the same for all lengths of legs.

Table 15: CROWS Legs Inspection

Item No.	Interval	Item to Check/Service	Procedure	Not Fully Functional If:
7	Before operation	CROWS Legs	Inspect the overall condition of each CROWS Legs to ensure they are undamaged, not bent and that the connecting fixtures at each end are fitted and complete.	If the Leg mechanism is bent or damaged

7	Before operation	CROWS Legs	Ensure that the attaching mechanism at the base of each leg, items A and C as shown below, is undamaged, is complete, and that the screw and nut assembly turns freely. 	If the mechanism will not lock or unlock freely
			A standard twist lock is supplied and fitted to the top of each Leg. Ensure the twist lock operates freely through both the latch and unlatch positions using the attached lever.	If the mechanism will not lock or unlock freely

CROWS Transport Locking Bars Check

31. Check the CROWS transport locking bars as shown in Figure 18 and detailed in Table 11.

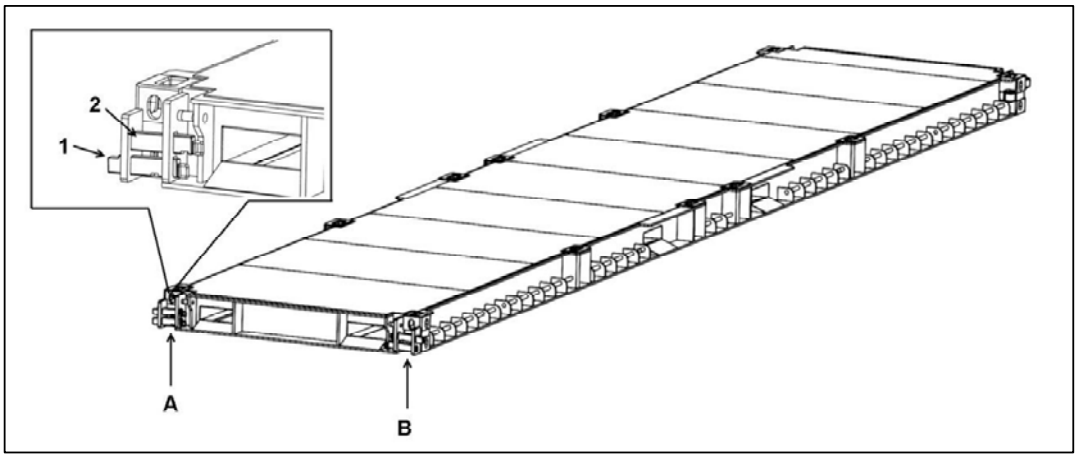


Figure 18: CROWS Transport Locking Bar

Item Number	Description
1	Lower Locking Bar
2	Upper Locking Bar

Table 16: CROWS Locking Bars Inspection

Item No.	Interval	Item to Check/Service	Procedure	Not Fully Functional If:
8	Before operation	Transport Locking Bars	Locate the two locking bar assemblies located at A & B on Figure 18. Inspect the two locking bar mechanism situated at1 and 2 in Figure 18. Ensure mechanism including slide bolt and retaining bracket is not bent and slide bolt moves freely in both the locked and unlocked positions. Ensure the mechanism is not bent or distorted.	If the mechanism will not lock or unlock freely If the mechanism is bent or distorted

Assembly

32. This Assembly section details the following configurations of the CROWS:

    a. The procedure to nest empty CROWS using double ended twist-locks for transportation or warehousing.

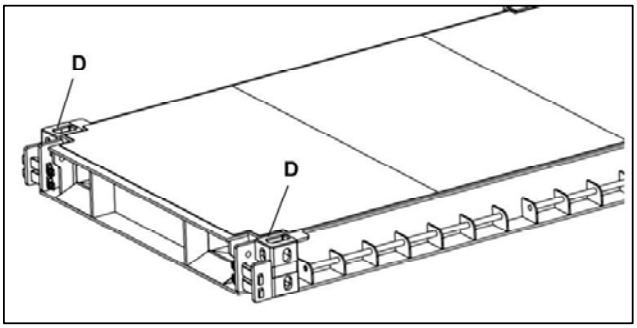
    b. The procedure for the CROWS Legs installation if they are required for stacking loads during transportation or stacking in a warehousing situation. This section will outline the procedure and tools required for installing CROWS Legs

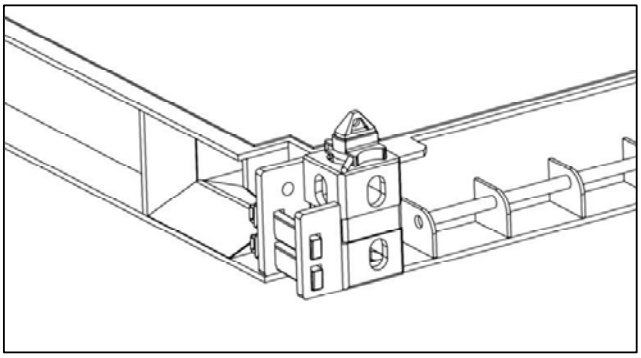
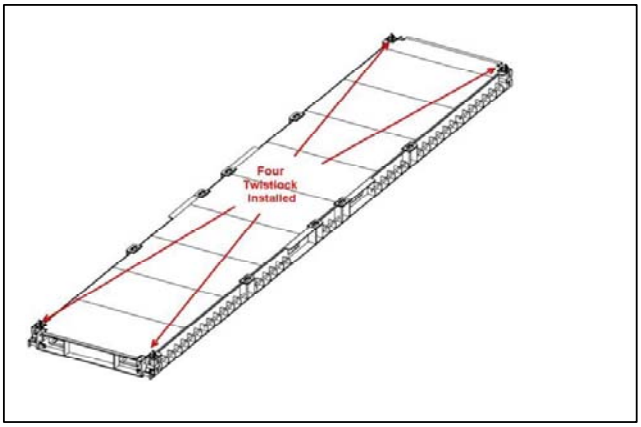
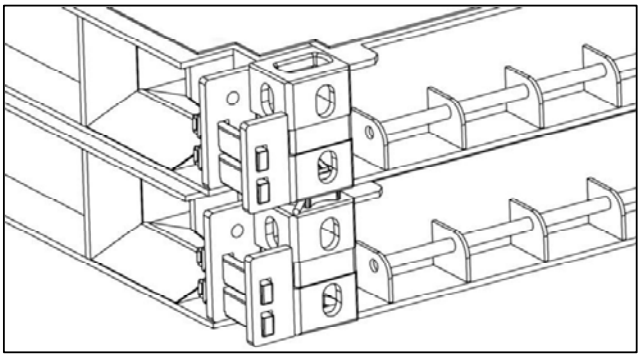
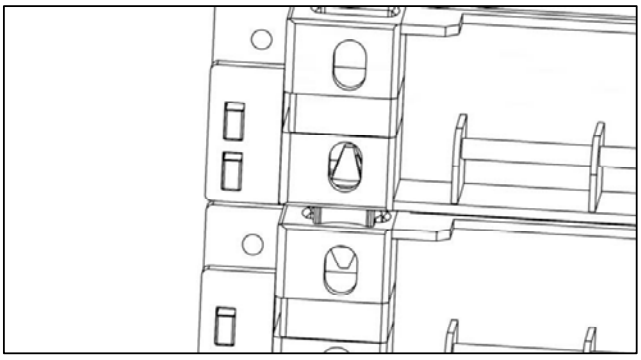
    c. The assembly of the CROWS Claws if required for transportation on a flatbed truck/trailer or MAFI trailer.

CROWS Nesting Installation

33. Table 17 below details the procedure for nesting empty CROWS as shown in Figure 5.

Table 17: CROWS Nesting Procedure

34	Position CROWS platform on a hard level surface and locate mounting point (D) on deck.	

35	Install a double ended twist-lock in the mounting point.	
36	Install double ended twist-locks at all four corner mounting points.	
37	Position the next CROWS such that all four mounting point align with the four double ended twist-locks.	
38	Lock all four twist-locks in the locked position.	

CROWS Legs Installation

If at any time the CROWS legs cannot be fully tightened i.e. the leg is loose after fully tightening the bolt, the legs have been damaged and must be repaired or replaced.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

39. The following procedure should be used to fit 4 CROWS Legs to a CROWS platform. An instruction panel is affixed to each CROWS leg for operator guidance.

Figure 19: CROWS Legs Information Label

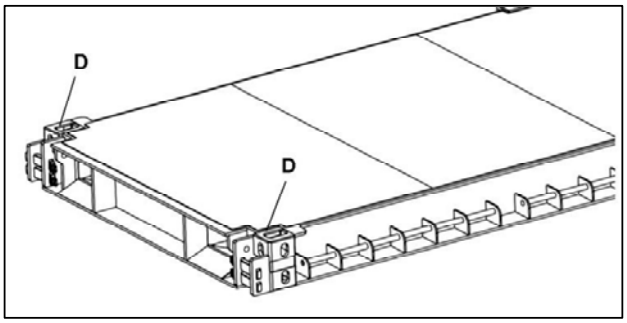
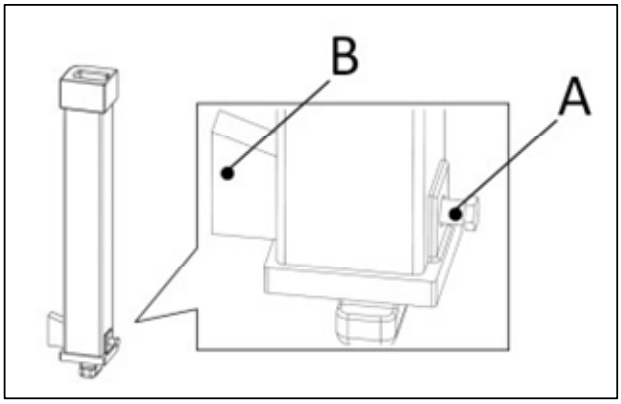
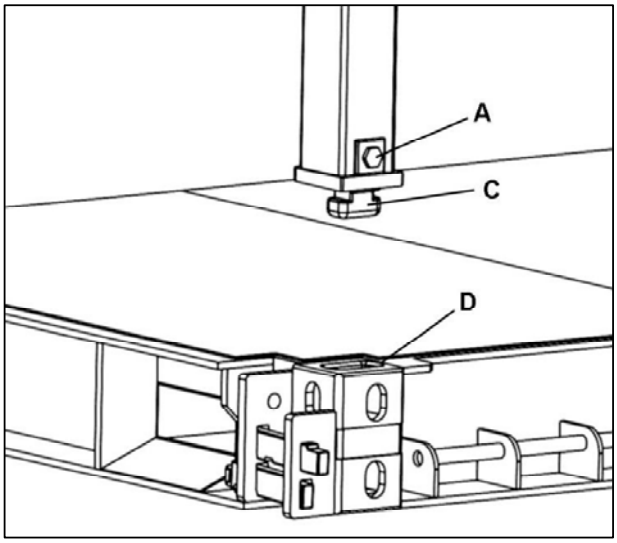
40. The following parts and tools are required to complete the task:

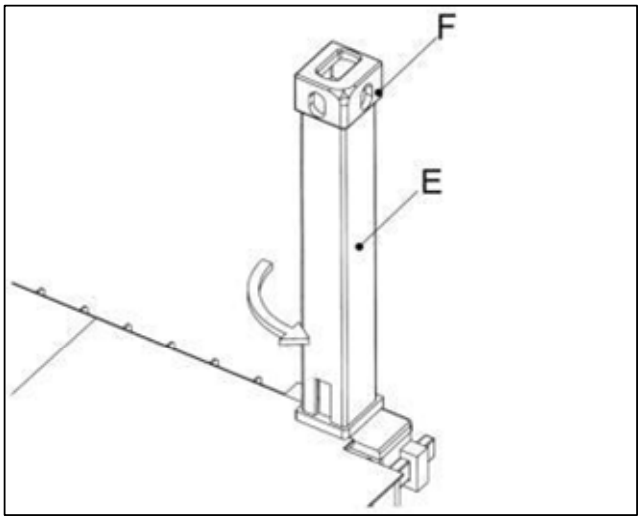
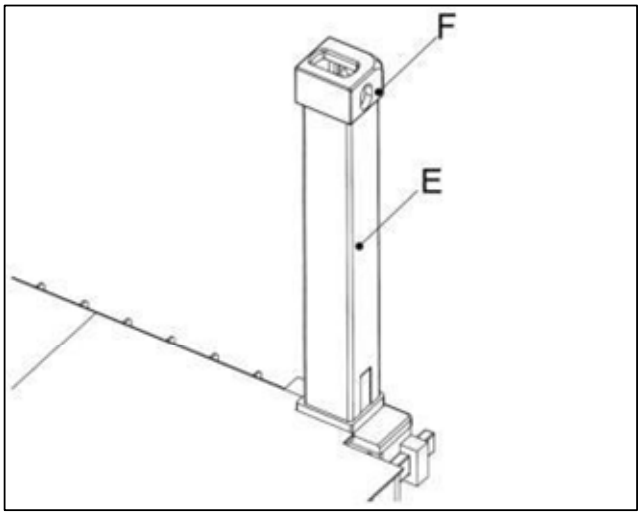
    a. 1x CROWS platform.

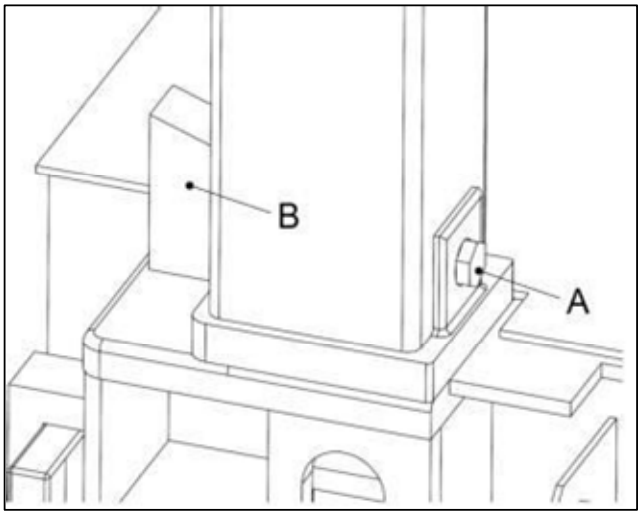
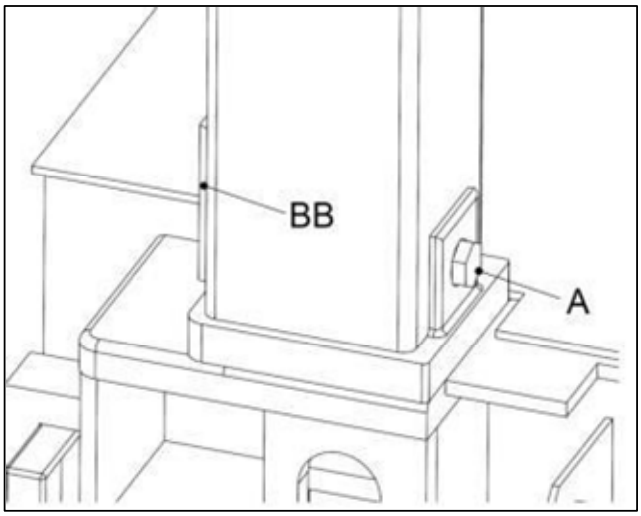
    b. 4x CROWS Legs, of equal length, 2 x Left Hand & 2x Right Hand (Legs are marked LH or RH and are further identified by each having a top corner casting right hand or left hand)

    c. 1x 3/4in drive x 500mm ratchet and 30mm socket (for tightening the lower twist lock securing nut.)

Table 18: CROWS Legs Installation

41.	Position CROWS platform on a hard level surface and locate mounting point (D) on deck.	
42.	Select a left hand (LH) CROWS leg, undo nut (A) and slacken off the wedge (B).	
43.	Using suitable lifting equipment, position the LH leg vertically over the LH mounting plate on the CROWS platform. Ensure the weight of the Leg, weights outlined in Table 10, is adequately supported during this stage of the process. Insert the twist lock (C) into the top corner casting (D) of the CROWS deck LH to LH.	

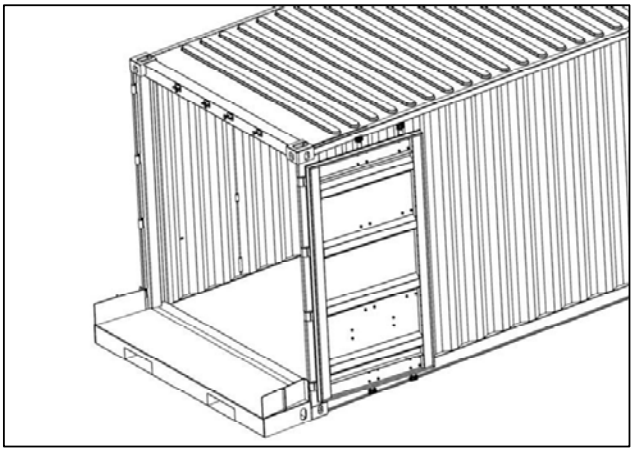
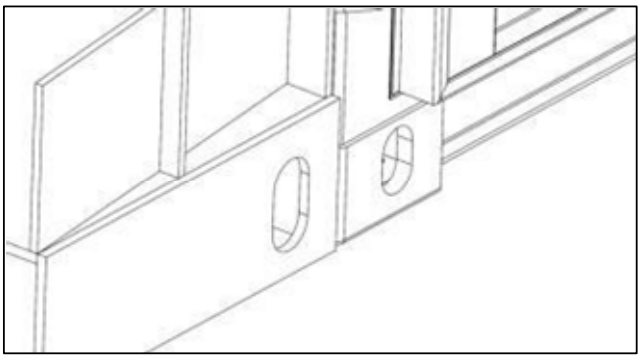
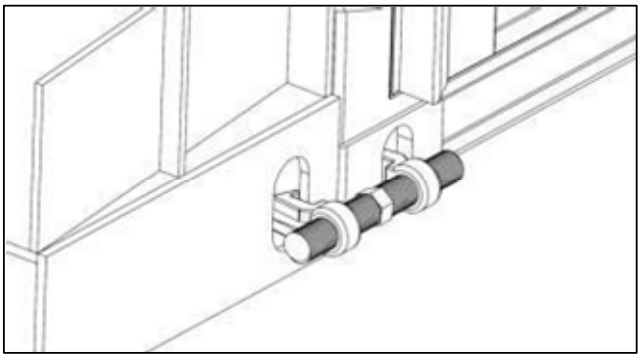
44.	Rotate the whole leg (E) through 90 degrees so that the twist-lock is locked inside the mounting plate and the leg top casting (F) is orientated with the end and side facing outwards from the container as ISO specifies.	
45.	Leg in the correct final position. Note: Ensure the bevelled edge of upper corner casting (F) is facing outwards	

46.	Using drive ratchet and 30 mm socket, tighten the securing bolt (A) looking inside through the apertures to make sure that wedge (B) is drawing smoothly into the clamped position (BB)	
47.	The bolt (A) needs to be tightened to a firm fit using full arm strength only. Do not over tighten by standing on the socket wrench, using your feet to push against the socket wrench, or using other leverage gaining means such as a “cheater bar or pipe”.	

CROWS Ramp Installation

48. This section details the procedure for installation of the CROWS Ramps. The Ramps are used at the door of the container to support the front end of the CROWS during installation. The Ramps installation procedure is detailed below in Table 19. The removal of the Ramps is the reverse to the installation procedure.

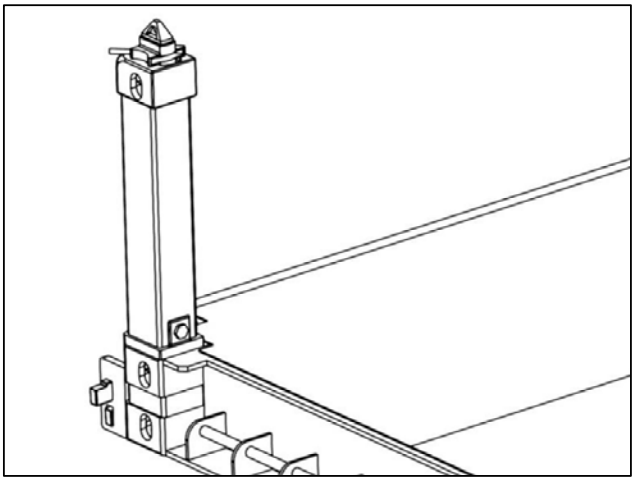
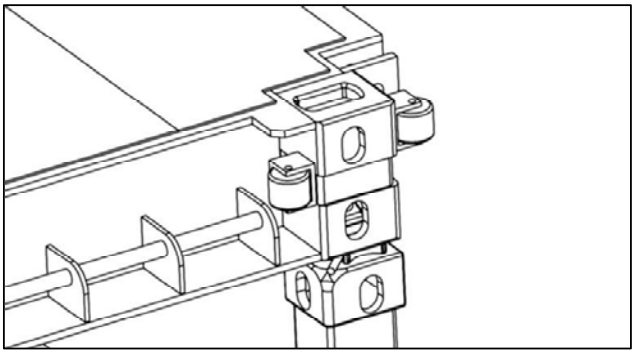
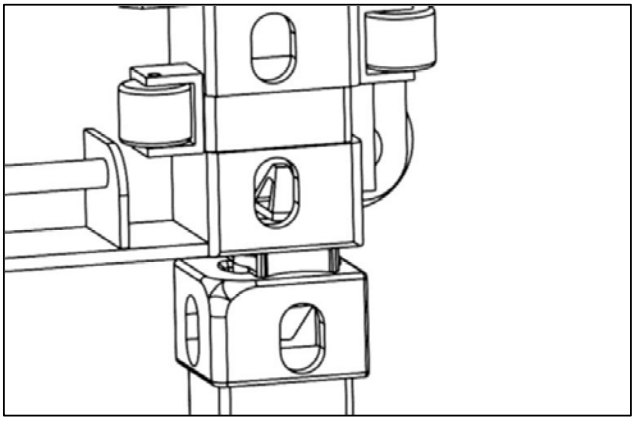
Table 19: CROWS Ramp Installation Procedure

49	Position the Ramp at the open door end of the 40 foot container.	
50	Move the ramp such that it is hard against the container door frame.	
51	Install and tighten bridge fitting to secure the ramp to the container.	

CROWS Stacking Installation

53. Once four Legs are installed as outlined in Table 18, a second CROWS can be secured to the top corner fitting of the Legs, using a double ended twist-lock. This process is outlined below in Table 20.

Table 20: CROWS Stacking Procedure

54	Install a double ended twist-lock in the top corner fitting of all four Legs.	
55	A second CROWS must then be aligned such that all corners fitting of the CROWS are fitted to the double ended twist lock on the Leg.	
56	All four double ended twistlocks must be locked in the locked position, locking the top CROWS to the Legs.	

CROWS Claws Installation

The CROWS Claws are only suitable for use with flatbed trucks and trailers; they are not to be used on skeleton trucks or skeleton trailers.

All twist-locks on the truck and the Claws must be in the locked position before transporting CROWS.

Double stacked 40 foot CROWS on a truck or trailer using CROWS Claws is not permitted

Failure to comply may result in severe injury or death to personnel and damage to equipment.

57. The CROWS Claws are an adaptor that allows the CROWS to be secured onto a flatbed truck or trailer with Standard 40 foot GP container footprint attachments.

58. The Claws consists of two 25mm plates with standard twist locks attached at a location of the CROWS corner fittings relative to the ISO footprint. The CLAWS are shown below in Figure 20.

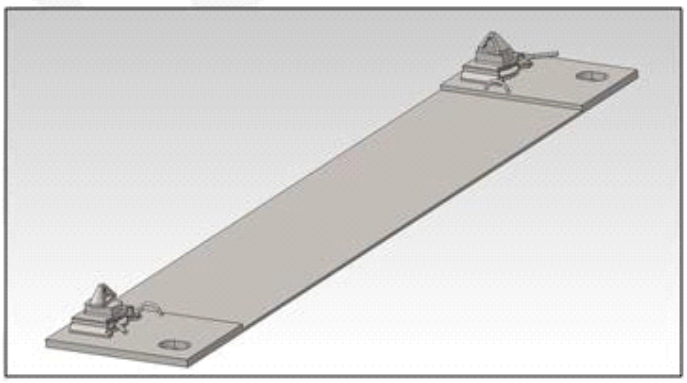
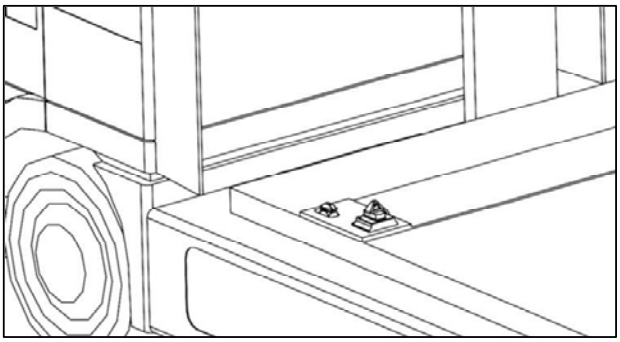
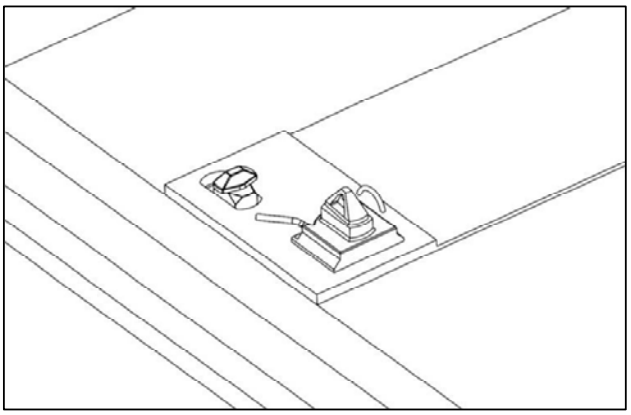
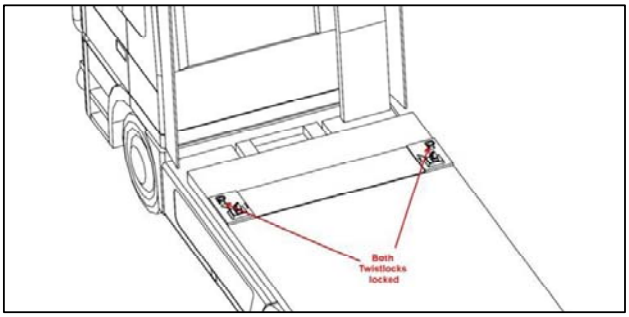
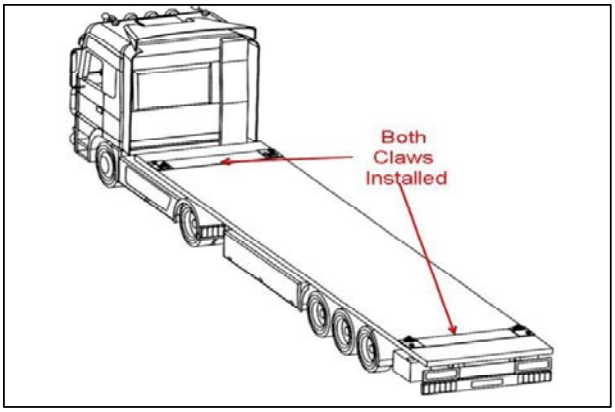
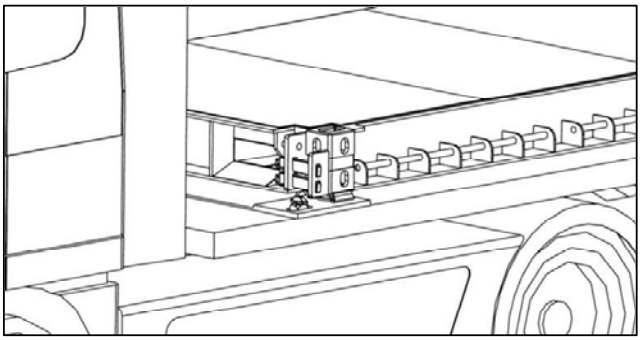
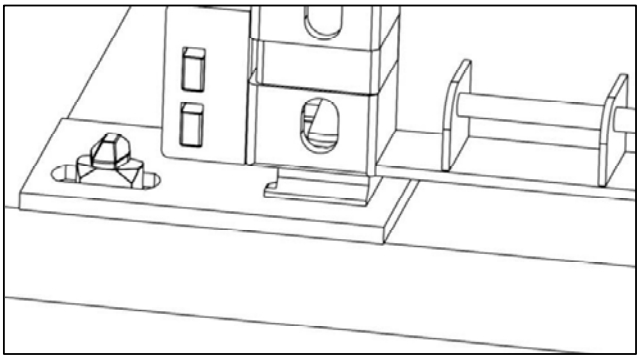


Figure 20: CROWS Claws V2 (Flatbed Truck and Trailer only)

59. The CROWS Claws are only to be use on flatbed trucks or trailers; they are not to be used on skeleton trucks or skeleton trailers. The method for operating the CROWS Claws is detailed in Table 21

Table 21: CROWS Claws Operation on Flatbed truck and trailer

1	Position CROWS CLAWS on the truck such that the plate apertures correspond with the twist-lock location on the truck or trailer.	
2	Lock the truck twist-lock.	
3	Lock the Claws at both twist-lock locations.	
4	Install Claws at both ends of the Truck/trailer.	

5	Lower the CROWS platform onto CROWS Claws twist-locks.	
6	Lock the Claws twist-locks.	
7	Twist locks must be locked at all location on the truck and on the Claws before transportation.	

60. The Claws used for the MAFI trailers are the CROWS Claws V3 (MAFI Trailer only), the key difference is the 25 mm plate mounted to the base, as shown below in Figure 21 and detailed in Table 17. The plate allows for a double ended twist-lock to be secured to the trailer and the CLAWS without the Claws sitting on an angle.

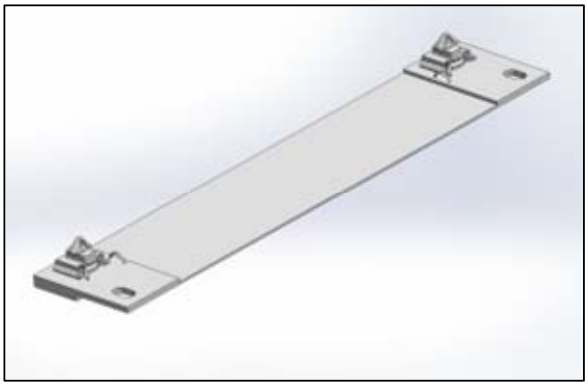
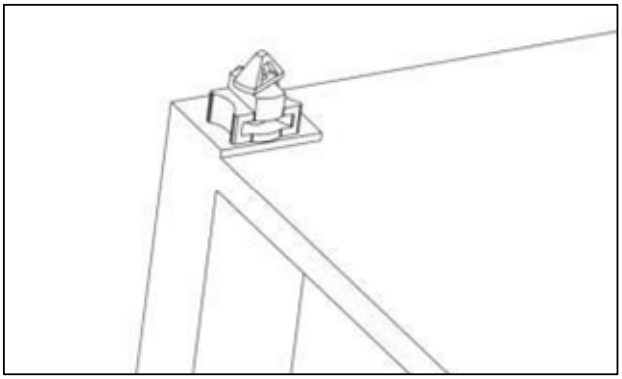
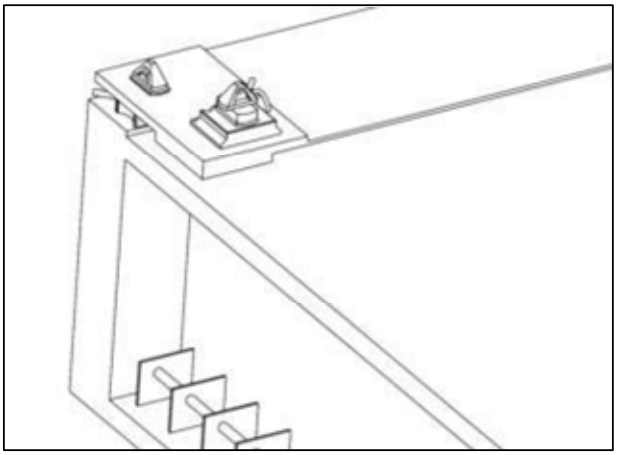
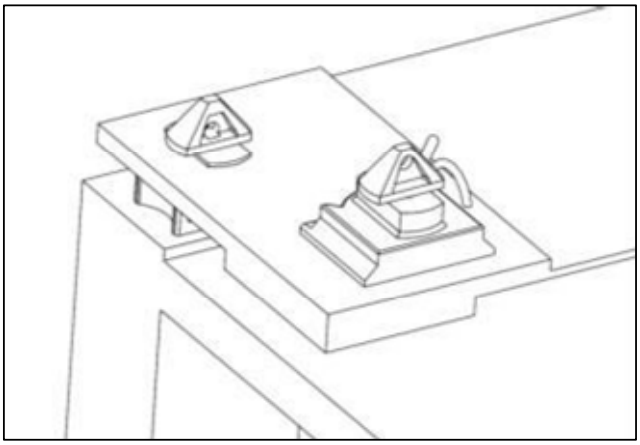
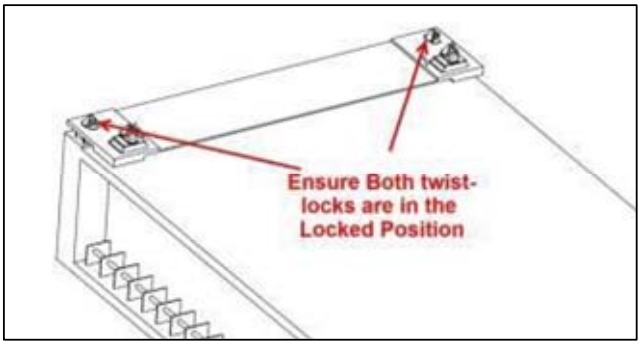
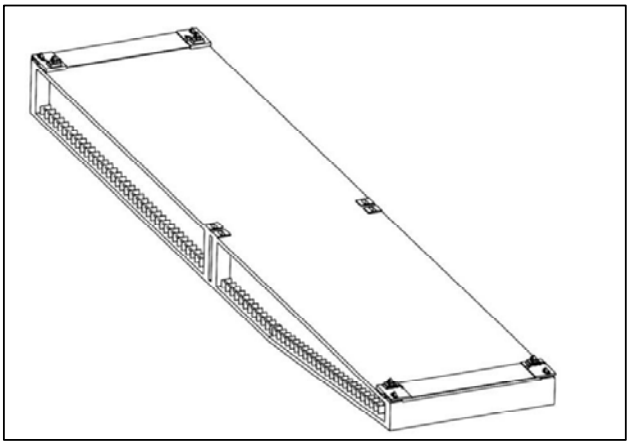
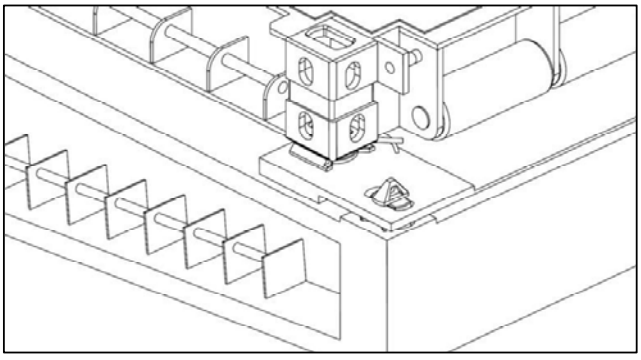
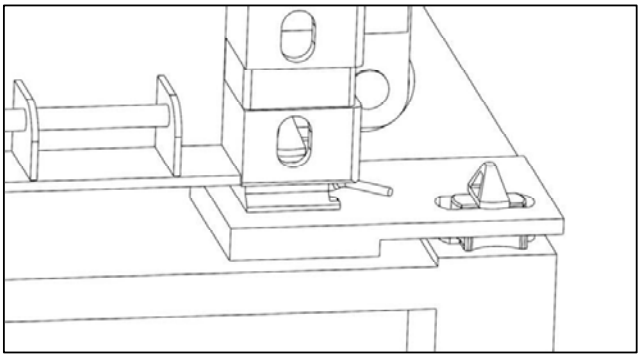


Figure 21: CROWS Claws V3 (MAFI Trailer only)

Table 22: MAFI CROWS Claws Installation

1	Install double ended twist-locks at the appropriate locations on the MAFI trailers.	
2	Position MAFI trailer CROWS Claws V3 on the trailer such that the plate apertures correspond with the double ended twist-lock fitted to the trailer.	

3	Lock the double ended twist-lock	
4	Lock the Claws at both twist-lock locations.	
5	Install Claws at both 40 foot ISO twist lock location on the MAFI trailer.	
6	Lower the CROWS platform onto CROWS Claws twist-locks.	

7	Lock the Claws twist-locks.	
8	Twist-locks must be locked at all location on the MAFI trailer and on the Claws before transportation.	
Note: This operation is consistent with the maximum speed limit of the MAFI trailer to 6km/h		

Loading

Suitable **Material Handling Equipment (MHE)** must be used to move, load, unload and stack CROWS. Key safety requirements include:

- The MHE has to be rated and capable of lifting the Maximum Gross Weight (MGW) of CROWS, including secured load.
- The MHE needs to have appropriate lifting tines to suit the CROWS tine pockets.
- All moving, loading and unloading activities need to be carried out on suitable level, even and compacted surfaces.
- Particular attention is needed when moving, loading and unloading stacked CROWS assemblies to ensure MHE is capable of handling total gross weight of stack.

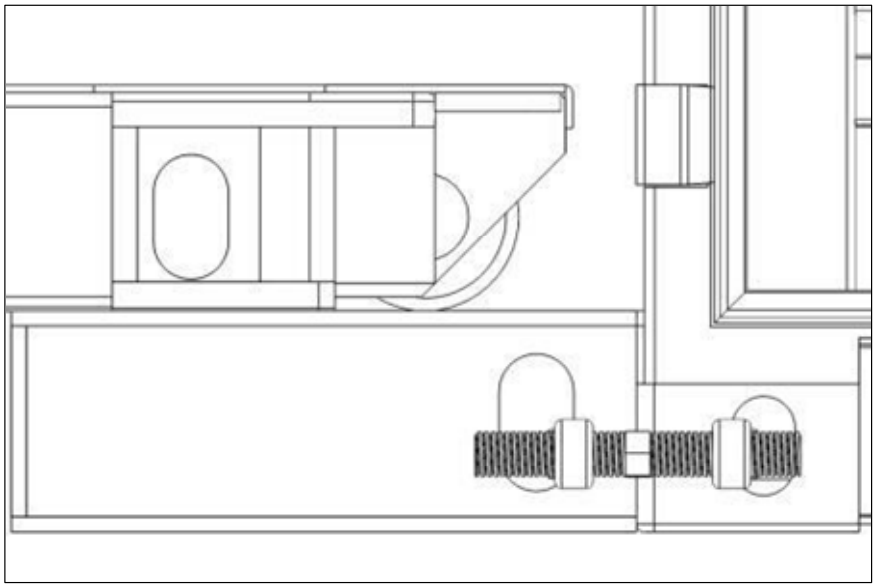
Failure to comply may result in severe injury or death to personnel and damage to equipment.

Single CROWS Loading Procedure

61. The procedure for loading a single CROWS into a 40ft ISO shipping container is detailed in Table 23, as follows:

Table 23: Single CROWS Loading Procedure

1	The 40ft ISO Container that is being used to transport the nested CROWS can be either General Purpose or High Cube configuration. The container needs to be positioned on level, hard compacted surface such as concrete or compacted gravel. The container loading doors both need to be fully opened and restrained.
2	Install CROWS Ramp in accordance with the CROWS Ramp installation section of this manual.

3	The CROWS platform is lifted and positioned directly in front of the opened container doors using a suitable MHE using the side tine pockets, or crane and slings using designated lifting points at each corner of the CROWS frame The front end of the CROWS needs to be supported using either the CROWS Ramp (as shown in Figure 22) or similar support and timber gluts to ensure CROWS rollers are level with the container floor height.  **Figure 22: CROWS Front supported using Ramp** **Note:** The ramp guide has been removed from Figure 22 for clarity. Suitable Manual Handling Equipment (MHE) must be used to move, load and unload and stack CROWS.
4	A suitable MHE with lifting forks is then positioned at the rear of the CROWS and both tines adjusted to fit the end tine pockets, ensuring the tines are extended fully to contact the outer sides of the pockets. The MHE then slowly inserts the tines into the end tine pockets of the CROWS until contact is made with the end of the pockets. The end of the CROWS can then be raised to a height that will allow the rollers at the front of the CROWS to contact the platform and the CROWS can be moved. Warning The CROWS should not be raised to a height exceeding 400mm, measured at the deck surface.

5	Warning A spotter is required to carry out this part of the loading operation. Using the MHE, slowly roll the CROWS forward into the container, ensuring that an equal gap between the side of the CROWS and the container wall on each side is maintained. A spotter, positioned at the side of the container door entrance will need to give the MHE operator positioning directions to ensure the CROWS is loaded without binding on container walls. The loading continues until the base CROWS frame contacts the rear wall of the shipping container. At this point the CROWS can be lowered gently onto the floor of the container, and the MHE tines withdrawn from the CROWS frame Warning Operators involved in moving, stacking, loading or unloading CROWS should be suitably qualified and experienced, and wear appropriate approved Personnel Protective Equipment (PPE)
6	The CROWS can now be secured inside the shipping container by activating the 2 securing latches shown at A & B at Figure 18. The latches, at the rear of the CROWS frame, are slid to an outwards position to allow the locking pivot bar to engage in the slot in the top of the latch. This will allow the latches to fit behind the front corner posts of the shipping container and prevent the CROWS from moving when being transported.
7	Remove the CROWS ramp by reversing the Ramp installation section of this manual.
8	The 20ft shipping container doors can be closed and latched shut, and locked if required.

Stacked CROWS loading procedure

When Stacking CROWS for transportation inside a container the following restrictions apply.

- The payloads for 2 high stacked 40 foot CROWS must be in accordance with Table 2.
- The payloads for 20 foot CROWS stacked on 40 foot CROWS must conform to the payloads detailed in Chapter 1: 40 foot and 20 foot Configurations.
- The CROWS legs must be installed in accordance with the CROWS legs installation section of this manual.
- CROWS must be stacked in accordance with the CROWS Stacking section of this manual.
- Stacking three high 40 foot CROWS for transportation is not permitted.
- Stacking 40 foot CROWS for transportation shall only occur 2 high.
- If at any time the CROWS legs cannot be fully tightened i.e. the leg is loose after fully tightening the bolt, the legs have been damaged and must be repaired or replaced.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

62. The procedure for loading 2 stacked CROWS into a 40ft ISO shipping container follows the process detailed in paragraph 61 for loading a single CROWS platform with the additional warning instructions below.

    a. Attention must be paid to the loading of stacked CROWS that the load does not come in contact with the top of shipping container door opening or inside walls of the container. Failure to exercise extreme caution during insertion may result in damage to container, CROWS or load.

    b. Ensure the maximum load restrictions are adhered to.

    c. Ensure at least two of the CROWS locking bars per CROWS are engaged before transportation.

Unloading

Single and Stacked CROWS unloading procedure

63. The procedure for unloading CROWS from a 40ft ISO shipping container are the reverse of the loading procedure in paragraphs 61 - 62 above with the following additional warnings:

    a. When unlatching the 40ft ISO shipping container main doors, be aware of possible load shift within the container which could result in cargo resting against the inside of the door/doors. Care should be taken to ensure that personnel stand behind the door being opened and not in the container opening until it has been confirmed that all cargo is adequately restrained.

b. Conduct an inspection to confirm that there are no obstructions between the side of each CROWS and the container walls. This including ensuring that all load restraints are still secured and tight, and will not obstruct the removal of the CROWS from the container. All loose load restraints need to be tightened prior to attempting to unload CROWS from shipping container.

Stacked 20 foot CROWS of 40 foot Truck and Trailer Transportation

64. This section details the payloads restrictions when transporting 20 foot CROWS stacked on 40 foot CROWS on a trailer or a truck using the CROWS Claws.

When using the CROWS Claws to transport Nested or Stacked CROWS on a Truck MAFI the following restrictions apply:

- The CROWS Claws must be installed in accordance with the CROWS Claws Installation section of this manual.
- Stacked 40 foot CROWS are not permitted for truck or trailer transportation using the CROWS Claws
- CROWS can be nested a maximum of three high on a truck or MAFI Trailer.
- **4 foot legs are not permitted for truck or trailer transportation using CROWS Claws.**
- The payload restrictions for stacked 20 foot CROWS on 40 foot CROWS in different configurations is shown below in Figure 24 to Figure 28.
- The CROWS Legs must be installed in accordance with the CROWS Legs installation.
- CROWS must be stacked in accordance with the CROWS Stacking section of this manual.
- Four double ended twist-locks must join the top CROWS to the top of the legs.
- The CROWS must be nested in accordance with the CROWS nesting section of this manual.
- If at any time the CROWS legs cannot be fully tightened i.e. the leg is loose after fully tightening the bolt, the legs have been damaged and must be repaired or replaced.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

65. The CROWS can be stacked a maximum of two high on a truck or MAFI trailer using the CROWS Claws, as shown in Figure 23.

Figure 23: Truck Transportation of Stack CROWS

66. The limitation and restrictions when transported on a truck or trailer using CROWS Claws are as follows:

    a. The CROWS legs must be installed in accordance with the CROWS Legs Installation section of this manual,

    b. The CROWS Claws must be installed in accordance with the CROWS Claws Installation section of this manual, and

    c. The MGW of both 40 foot and 20 foot CROWS cannot exceed 20,250kg.

67. The payload restriction of the 40 foot and 20 foot CROWS when transporting on a truck or trailer using the CROWS Claws are shown in Figure 24 to Figure 28 below.

    Note: Twist-lock weights are not included in the tare weight.

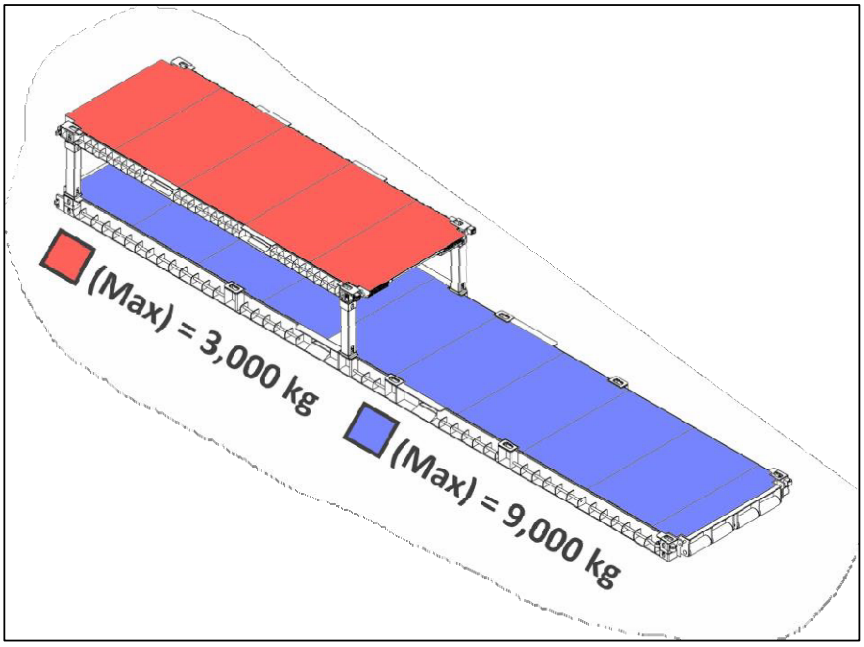


Figure 24: Single Stacked 20 Foot CROWS End Mounted

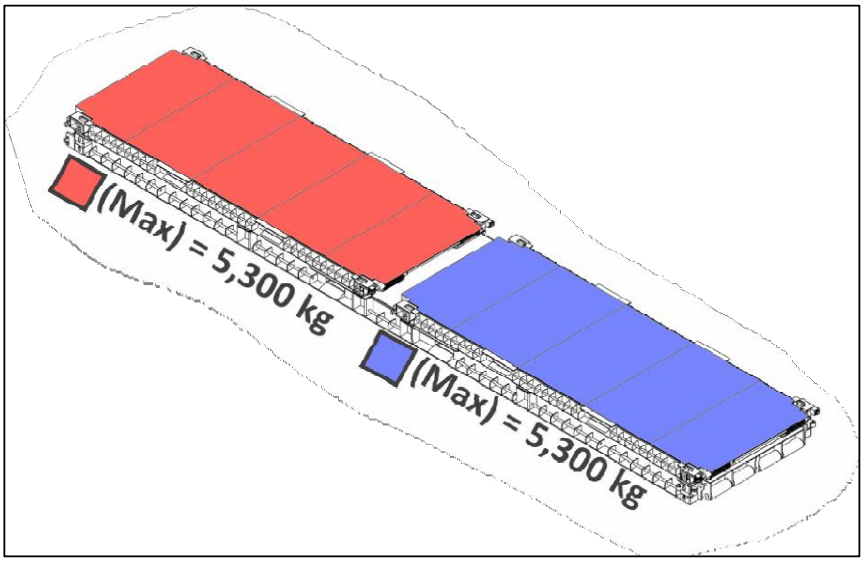


Figure 25: Two End Nested 20 Foot CROWS

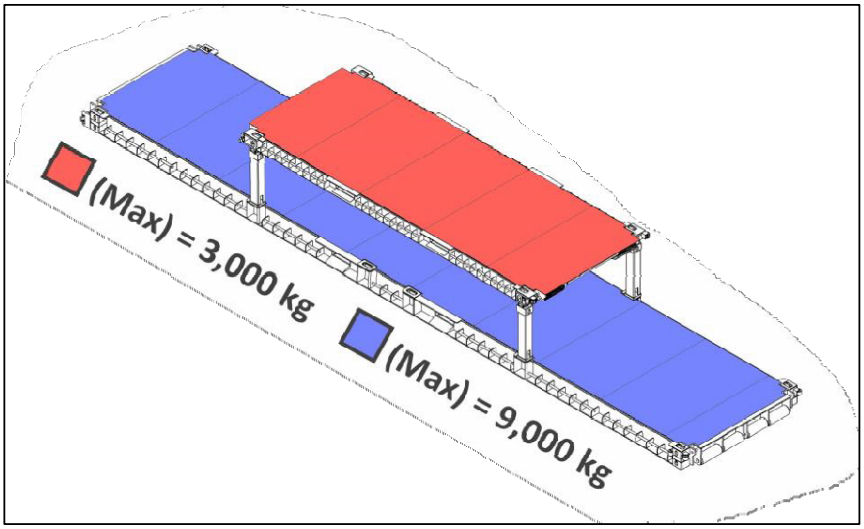


Figure 26: Centre Stacked 20 Foot CROWS

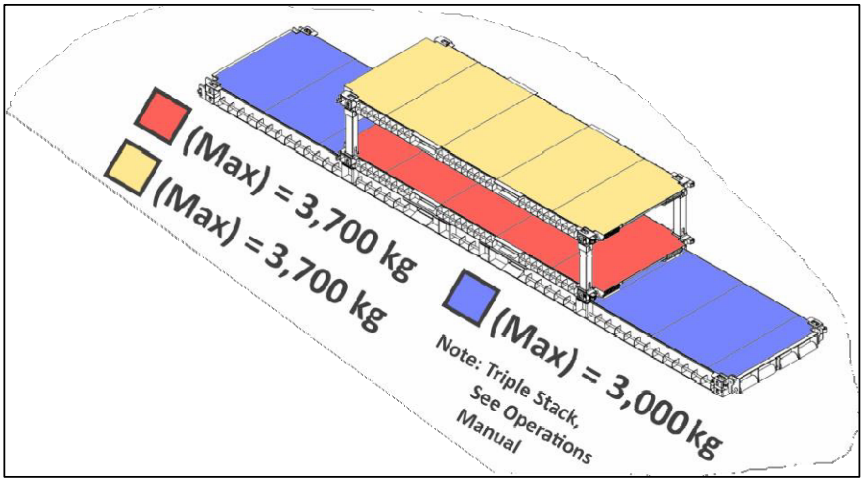


Figure 27: Center Nested 20 Foot CROWS Stack

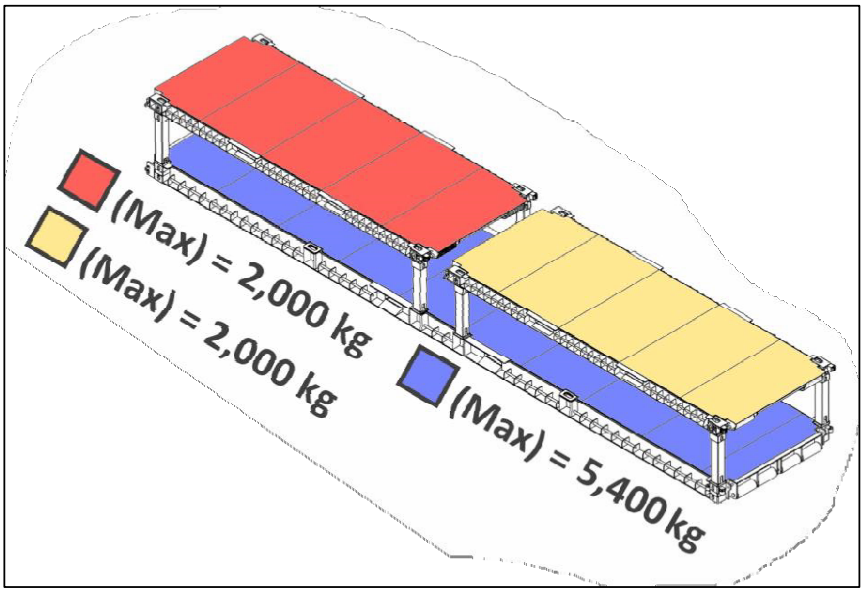


Figure 28: Two End Stacked 20 Foot CROWS

CROWS Warehousing Installation Procedure

68. The 40 foot CROWS are designed to be used as a storage and warehousing system. The 40 foot CROWS can be stacked up to 4 platforms high using the 1ft, 2ft and 3ft. when using 4 foot legs the 40 foot CROWS can be stacked 3 high for warehousing.

69. The 40 foot CROWS can be stored empty in a nested configuration up to 10 units high.

Ground requirements

70. The CROWS, when being used as warehousing system needs to be supported on suitably prepared compacted level ground surfaces which are able to support the weight of the stacked 40 foot CROWS. The surface needs to be the same standard that is currently being used to store shipping containers at all project locations.

71. The designated area must be clear of all obstacles including trees, power lines and other overhead obstructions. There must be adequate access for heavy machinery to safely load, unloading and move CROWS.

Nested Warehousing Installation

72. The procedure for nesting CROWS in a warehousing environment is repetition of the procedure outlined in Table 17.

73. This can occur up to 10 units high, as shown below in Figure 29.

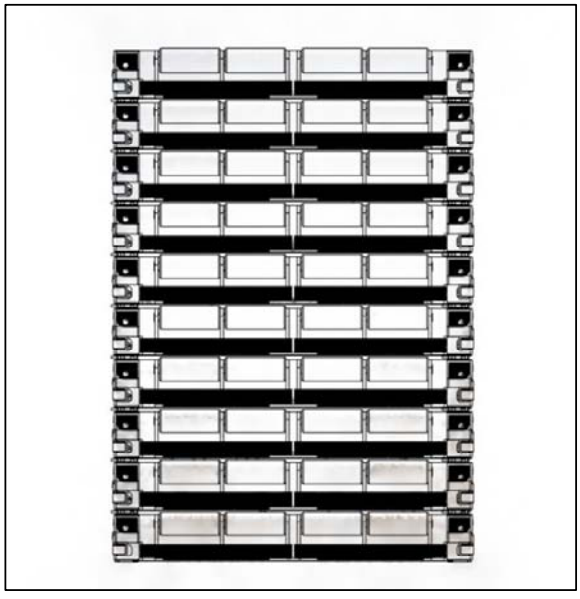


Figure 29: Warehouse Nested CROWS 10 High

Stacked Warehousing Configuration

74. Stacking of the 40 foot CROWS in a warehousing environment can occur up to four levels with 1, 2 and 3 foot legs and 3 high for 4 foot legs. However 4 CROWS in a single stack are not permitted and the stacking of CROWS when four high must be done in tandem. Figure 30 to Figure 33 below show the

permissible combinations, and Figure 34 shows the non-permissible stand-alone stacking of four CROWS.

Figure 30: Stand Alone Double Stack

Figure 31: Stand Alone Triple Stacking

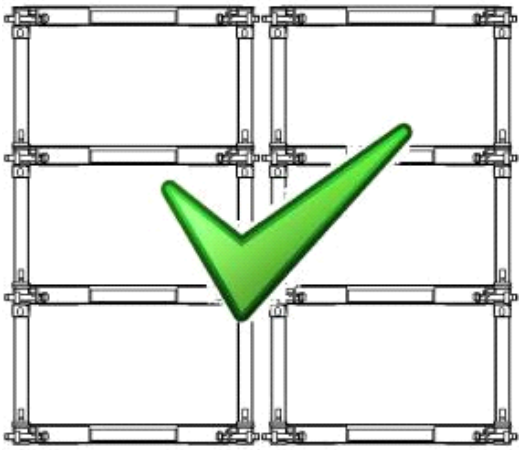


Figure 32: Double Four Stacking

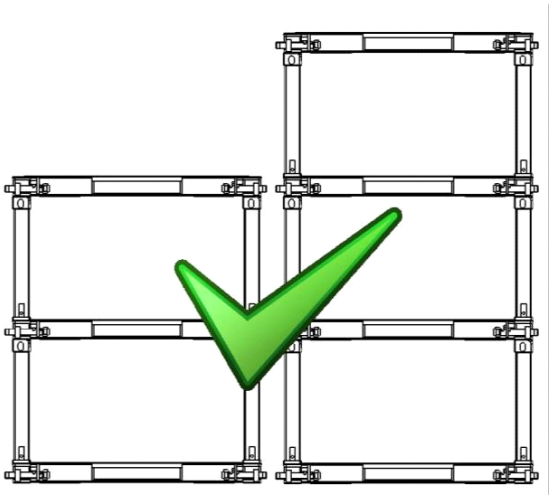


Figure 33: Pyramid Stacking

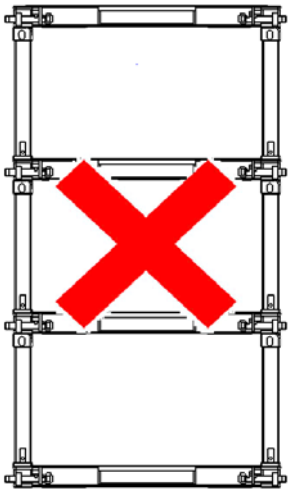
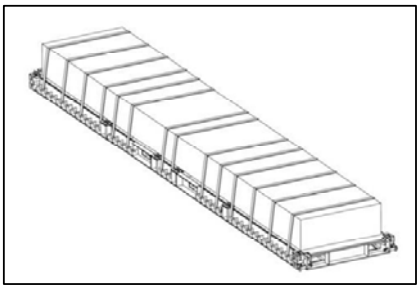


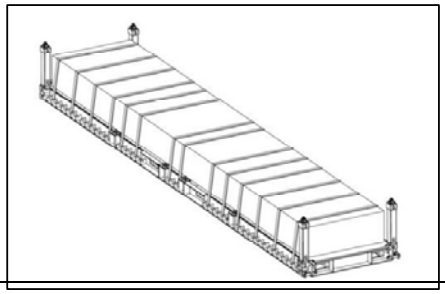
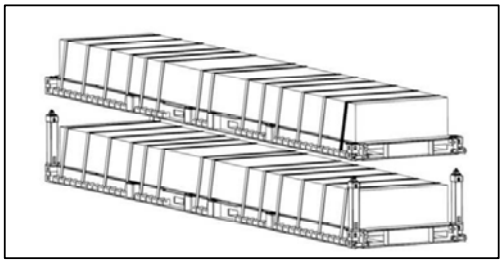
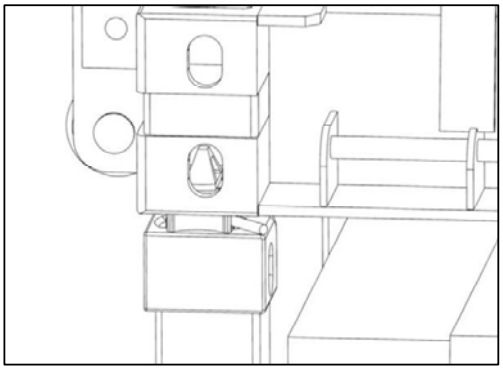
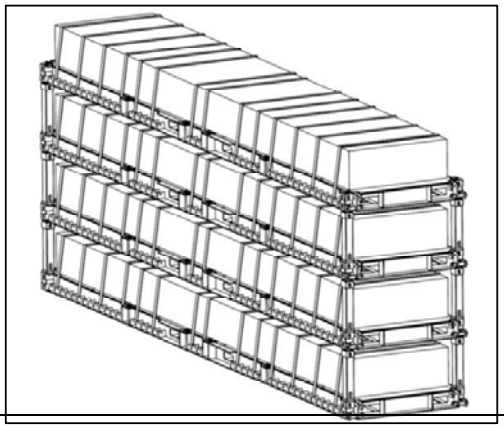
Figure 34: Stand Alone Four Stacking

Installation

75. The process of installing stacked CROWS for warehousing is detailed below.

Table 24: Stacked Warehousing Installation

1	With the CROWS platform at ground level, load each CROWS platform with the required cargo and suitable restraints, allowing enough clearance for CROWS Legs to be installed.	

2	Install 4 CROWS Legs onto each platform as per the process Installing CROWS legs in Table 18.	
3	The second level CROWS can be lowered onto the prepared base CROWS Legs.	
4	Once the corner castings of the upper CROWS platform have been fully engaged into the CROWS Legs twist-locks so the twist-locks can be locked.	
5	This process is repeated if additional levels of CROWS are required, up to 4 levels in total.	

76. When gluts are required underneath the CROWS, the gluts must be suitable material to support the weight of the CROWS and they must be located under the corner fittings of the base CROWS. As shown below in Figure 35.

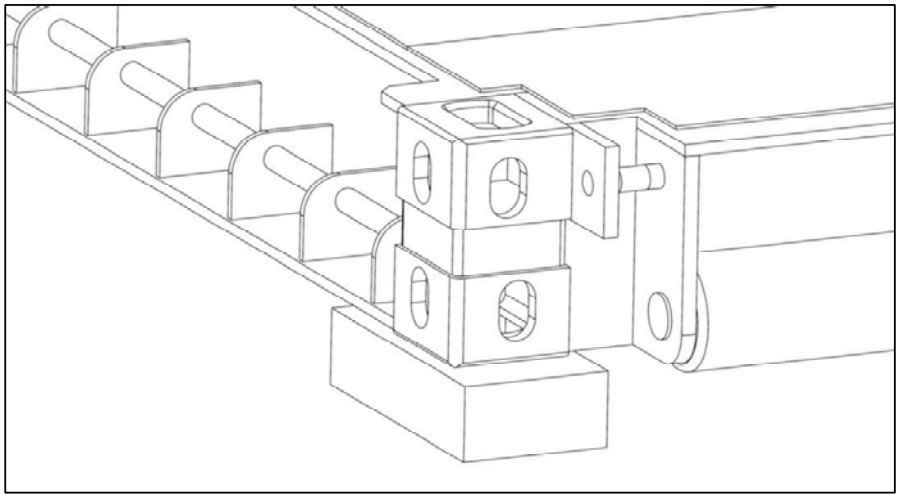


Figure 35: Glut Location under Corner Fitting

Note: When 100mm high gluts are used, the 279mm high CROWS Ramp must be installed in accordance with the CROWS Ramp installation section of this manual.

Lifting and Moving

77. The CROWS are a versatile multifunctional piece of materials handling equipment. They can be deployed in a number of configurations depending on the required function. It is therefore the purpose of this section to outline the specifications and weight limits for the CROWS configurations. These configurations consist of:

    a. Single loaded CROWS

    b. Double Stacked CROWS

    c. Nested CROWS

Single Loaded CROWS lifting

78. The single loaded CROWS follow the same weight requirements for lifting as listed in the Chapter 1 Table 1.

Table 25: Single CROWS Lifting Weight Limitations

Single CROWS Specifications	
Tare Weight (kg)	5,150
Payload (kg)	15,000
Maximum Gross Weight (MGW)	20,150

79. There are two lifting methods for the single fully laden CROWS;

a. Lifting with a forklift; and

b. Lifting with a crane (using Pigs Ears).

Lifting with a Forklift

80. Lifting with a forklift must only occur using the side fork pockets as shown in Figure 36, the end fork pocket is for roll in/ roll out procedure only.

Figure 36: Lifting Single CROWS from Side Forklift Pockets

Lifting with a Crane (Using Pigs Ears)

81. When using the container lifting hooks 'Pigs Ears' to lift from the corner castings, the 'Pigs Ears' must be installed by appropriately trained personnel. Once the 'Pigs Ears' are installed a spreader bar must be used as shown below in Figure 37.

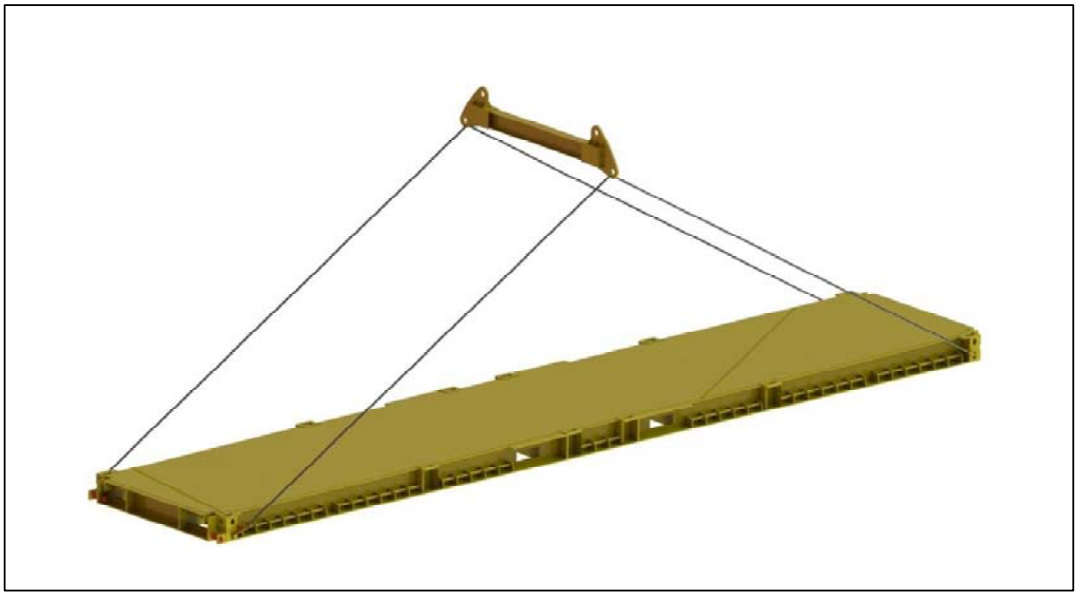


Figure 37: Lifting Single CROWS with Pigs Ears and Spreader Bar

82. The weight limits for lifting using a CRANE and Pigs Ears are specified in Table 25 above.

Double Stacked Lifting

83. When lifting double stacked CROWS it is important to understand that the base CROWS is supporting all the weight. The Maximum Gross Weight of any CROWS while moving or lifting is 12,000kg. Therefore the payload decreases as a portion of the load is taken by the second CROWS and the legs. The weight limitations are the same as listed in Chapter 1 Table 2.

Table 26: Lifting Double Stacked CROWS Weight Limitations

Configurations	Tare Weight (kg)	Maximum Payload (kg)	Maximum Gross Weight (kg)	Height (mm)
Double Stacked (1 foot legs)	10,436	9,714	20,150	933
Double Stacked (2 foot legs)	10,468	9,682	20,150	1233
Double Stacked (3 foot legs)	10,500	9,650	20,150	1533

84. There are two lifting methods for the double stacked, fully laden CROWS;
    a. Lifting with a forklift; and
    b. Lifting with a crane (using Pigs Ears).

Lifting with a Forklift

85. Lifting with a forklift must only occur using the side fork pockets as shown in Figure 38, the end fork pocket is for roll in/ roll out procedure only.

Figure 38: Lifting Stacked CROWS from Side Fork Lift Pocket

Lifting with a Crane (Using Pigs Ears)

86. When using the pigs ears to lift from the corner castings, the 'Pigs Ears' foot must be installed by appropriately trained personnel. The double stacked CROWS must be lifted from the Base CROWS. Once the 'Pigs Ears' are installed a spreader bar must be used as shown below in Figure 39.

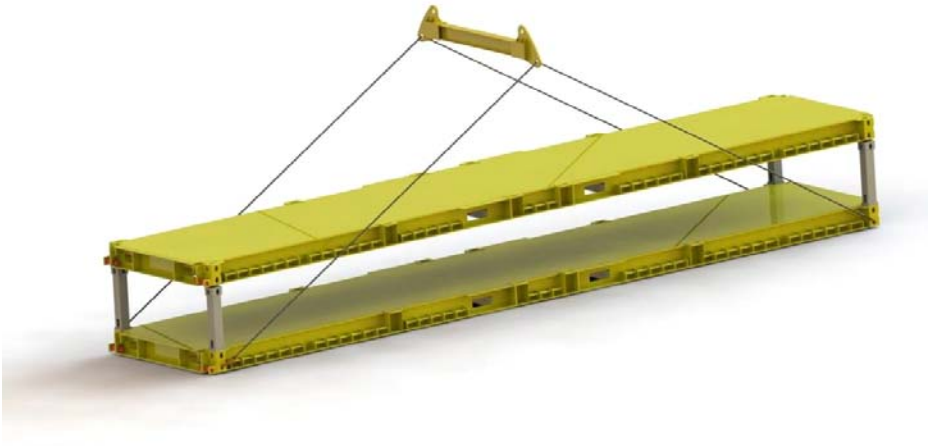


Figure 39: Lifting Stacked CROWS with Pigs Ears and Spreader Bar

87. The weight limits for lifting using a CRANE and 'Pigs Ears' are specified in Table 26 above.

Lifting Nested Crows

88. Similar to lifting the double stacked CROWS, when nested the base CROWS is supporting the entire weight. The limit of the number of CROWS that can be lifted in the nested configuration is 3. This allows for the 2 CROWS with a total combined weight of 10,300kg to be nested on the base CROWS. This is within the 15,000kg payload limit of the base CROWS.

89. When lifting Nested CROWS there are two options.

    a. Lifting with a forklift; and

    b. Lifting with a crane (using Pigs Ears).

Lifting with a Forklift

90. Lifting with a forklift must only occur using the side fork pockets as shown in Figure 40. The end fork pocket are for roll in/ roll out procedure only.

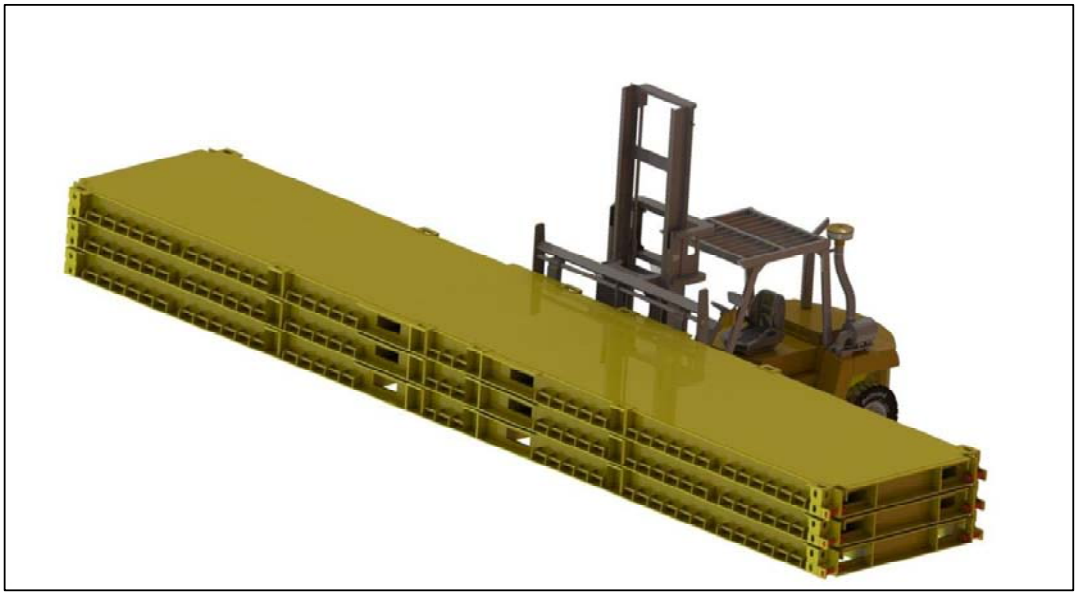


Figure 40: Lifting Nested CROWS from Side Fork Lift Pockets

Lifting with a Crane (Using Pigs Ears)

91. When using the 'Pigs Ears' to lift from the corner castings, 'Pigs Ears' foot must be installed by appropriately trained personnel. Once 'Pigs Ears' foot are installed a spreader bar must be used as shown below in Figure 41.

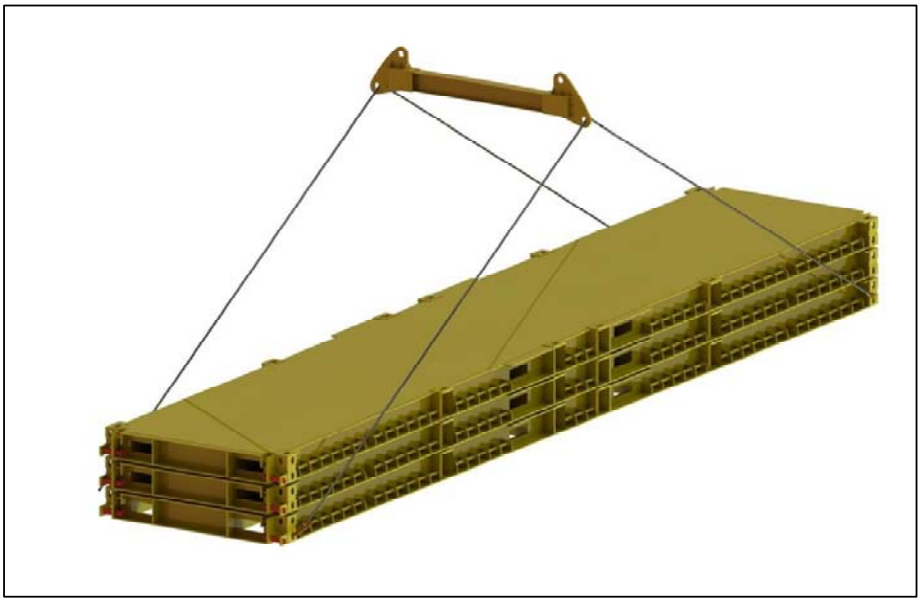


Figure 41: Lifting Nested CROWS with Pigs Ears and Spreader Bar

OPERATOR MAINTENANCE

Introduction

92. To ensure the CROWS remain in an operational condition, periodical maintenance must be undertaken in addition to the preparation for use checks. This section outlines the inspections and maintenance required.

93. Table 27 outlines the initial inspection requirements before maintenance is carried out.

94. Table 28 details the required action if maintenance is required. All maintenance must be carried out by appropriately trained and experienced personnel.

Responsibility

95. The operators are responsible for the scheduled inspection and maintenance of the CROWS. Failure to comply with the maintenance schedule will result in a potential void of the warranty conditions.

Maintenance Procedure

96. This section outlines the maintenance procedure for the CROWS; this procedure is designed to ensure the functionality of the CROWS over their life time. The maintenance procedure must be carried out once every 3 months. Figure 42 below shows the components of the CROWS identified in the Maintenance and testing procedures.

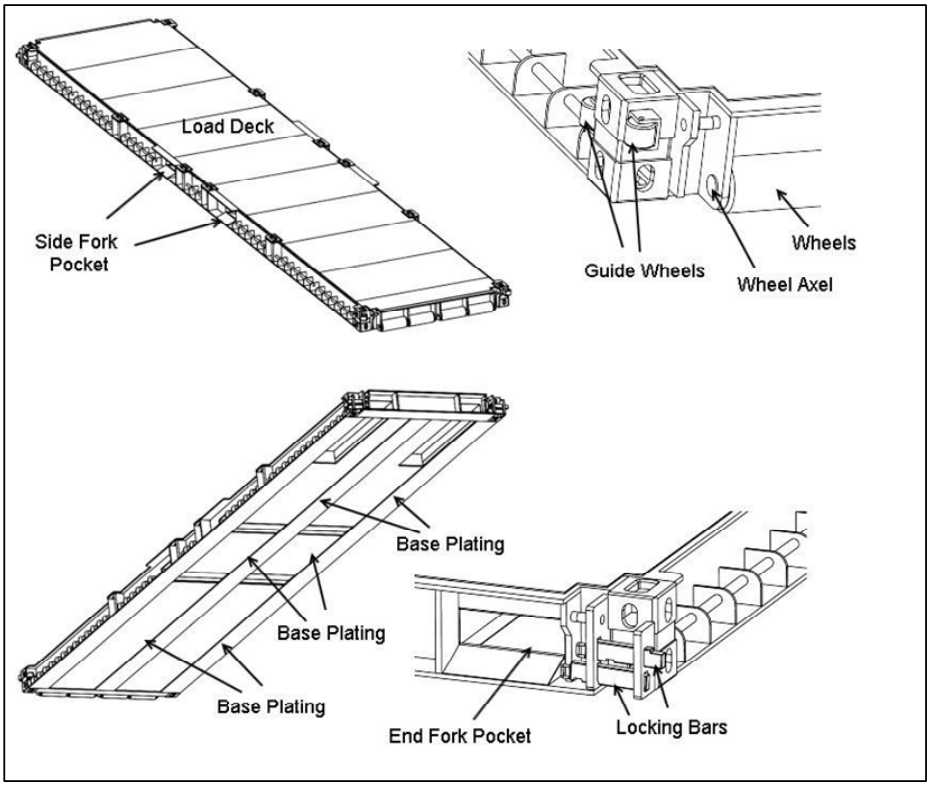


Figure 42: Maintenance Components

97. The maintenance procedure consists of three sections:
    a. Inspection
    b. Maintenance and repairs
    c. Verification
98. The Inspection process will occur initially, followed by all maintenance procedures and repairs where required. These procedures are outlined in Table 24 in the Maintenance and Repairs section. The final verification section details the checking required to ensure the maintenance and repairs have returned the CROWS to operational functionality.

Inspection

If at any time the CROWS legs cannot be fully tightened i.e. the leg is loose after fully tightening the bolt, the legs have been damaged and must be repaired or replaced.

Failure to comply may result in severe injury or death to personnel and damage to equipment.

99. This section outlines the initial inspection required during the maintenance process.
100. Table 27 below details the minimum inspections required to identify faults that could affect the CROWS functionality.

Note: many of these inspections should occur during the preparation for use phase of operations, detailed in Chapter 2.

Table 27: CROWS Inspection Procedure

Number	Item	Inspection Task
1	Wheels	Inspect for deformation Inspect for cracks Inspect for lodged items such as rocks and gravel
2	Wheel Axles	Grease
3	Locking Bar	Inspect for Corrosion and Deformation

4	Guide Wheel	Inspect for deformation Inspect for cracks Inspect for lodged items such as rocks and gravel
5	Tie Down Rails	Inspect for Corrosion and Deformation
6	Load Deck	Inspect for Corrosion and Deformation Clean
7	Fork Pockets	Inspect for Corrosion and Deformation. Inspect sealant for cracks and degradation
8	Base Plating	Remove and Inspect for Corrosion and Deformation Inspect sealant for cracks and degradation
9	CROWS Legs	Remove and inspect for corrosion and deformation Inspect for cracks and degradation
10	Legs base twist-lock mechanism	Inspect bolt for wear on the thread Inspect for cracks and degradation
11	Leg Stability	Inspect the leg for stability after securing

101. In the event that damage has occurred, repair or replacement will be required.

102. Table 28 in the following section, details the procedures required for maintenance and repairs.

Maintenance and Repairs

103. The maintenance of the CROWS ensures the continuity of functionality while in service.

104. Table 28 below details the maintenance required during all scheduled maintenance.

105. Table 28 additionally outlines the repairs required if defects are found in the inspection procedure.

Table 28: Maintenance Procedure

Number	Item	Maintenance Task	Repair
1	Wheels	The wheels are to be removed and grease is to be applied to the internal surface. Any stones or sharp object collected by the wheels are to be removed.	If the wheel requires repairs due to damage that is impeding its functionality, the wheel is to be replaced.
2	Wheel Axles	All corrosion is to be removed with an appropriate method.	If the pins are deformed such that they cannot function they must be replaced.
3	Locking Bar	Corrosion is to be removed with an appropriate method and anti-corrosion undercoat is to be applied and then repainted. Areas where paint has been removed an anti-corrosion undercoat is to be applied and then repainted.	If either bar is deformed or corroded such that they cannot function, they must be replaced.
4	Guide wheel	The wheels are to be removed and grease is to be applied to the internal surface.	If the wheel requires repairs due to damage that is impeding its functionality, the wheel is to be replaced.

5	Tie Down Rails	Corrosion must be removed with an appropriate method and an anti-corrosion undercoat is to be applied and then repainted. Areas where paint has been removed an anti-corrosion undercoat is to be applied and then repainted.	If either tie down rails is deformed or corroded such that they cannot function, SBI must be notified and an inspection must occur must occur with SBI engineers.
6	Load Deck	Corrosion must be removed with an appropriate method and an anti-corrosion undercoat is to be applied and then repainted. Areas where paint has been removed an anti-corrosion undercoat is to be applied and then repainted.	If the deck has been penetrated or deformed such that it is no longer functional, SBI must be notified and an inspection must occur with SBI engineers.
7	Fork Pockets	Ensure there is no deformation in the fork pocket that inhibits its functionality. Corrosion must be removed with an appropriate method and an anti-corrosion undercoat is to be applied and then repainted. Areas where paint has been removed an anti-corrosion undercoat is to be applied and then repainted.	If the fork pockets are damaged or deformed such that they are no longer functional. SBI must be informed and an inspection must occur must occur with SBI engineers.
8	Base Plating	Ensure there is no deformation or holes in the base plating that inhibits its functionality. Corrosion must be removed with an appropriate method and an anti-corrosion undercoat is to be applied and then repainted. Areas where paint has been removed an anti-corrosion undercoat is to be applied and then repainted. Reapply any sealant that has degraded or damaged.	If the base plates are damaged or deformed such that they are no longer functional. SBI must be informed and an inspection must occur must occur with SBI engineers.

Legs Maintenance

Table 29: Legs Maintenance Procedure

No.	Item	Maintenance Task	Repair
1	Post	Inspect the Square Hollow Section (SHS) of the legs for deformation, corrosion and cracks.	If the SHS is substantially deformed or corroded such that they are no longer functional the leg must be replaced
2	Bolt and Wedge Assembly	Check that the bolt and wedge can operate freely and there is no cross-threading.	If the bolt cannot be tightened in the wedge, both the bolt and wedge must be replaced.
3	Twist-lock Stem	Inspect the twist-lock stem for deformation, corrosion and wear.	If the stem is substantially deformed, corroded or worn such that they are no longer functional the leg must be replaced

Verification

106. Table 30 outlines the steps required to ensure that the CROWS have been maintained and or repaired to a functional state. Each maintenance and repair task must be inspected by qualified personnel.

Table 30: Verification Procedure

Number	Item	Maintenance Verification	Repair Verification	Responsibility
1	Wheels	Ensure that the grease is adequately applied, such that the wheel can rotate without obstruction.	The replaced wheel must be a Sea Box International supplied product. Ensure that the wheel is greased and can rotate freely.	Operator
2	Wheel Axles	Inspect that all the corrosion has been removed and treated.	Ensure that the axle is of the correct size for the supports and the wheel.	Operator
3	Locking Bar	Inspect the Locking Bars to ensure the removal of all corrosion and the application of paint is even without runs. Ensure that the new paint will not cause the bar to jam in the gussets.	Test the function of the new bar to ensure that it fits with the gussets. Test that the new bar fits with the locking latch.	Operator
4	Locking Latch	Inspect the Latches to ensure the removal of all corrosion and the application of paint is even, without runs. Ensure that the new paint will not cause the latch to jam in the in the locking bar.	Test the function of the new latch to ensure that it fits with the locking bar. Test that the new latch fits with the locking bar.	Operator

5	Tie Down Rails	Inspect the Tie Downs to ensure the removal of all corrosion and the application of paint is even, without runs. Ensure no surface areas have exposed metal.	SBI engineering to inspect and test the repairs to ensure the load rating is maintained. Ensure the appropriate testing is performed to clarify the repairs meet the design requirements.	Operator (Maintenance) SBI Engineer (Repairs)
6	Load Deck	Inspect the Load Deck to ensure the removal of all corrosion and the application of paint is even, without runs. Ensure no surface areas have exposed metal.	The area of the deck repaired must be inspected by SBI to ensure the quality of the repair and a quarantine inspector to ensure quarantine compliance.	Operator (Maintenance) SBI Engineer (Repairs)
7	Fork Pockets	Inspect the Fork Pocket to ensure the removal of all corrosion and the application of paint is even, without runs. Ensure no surface areas have exposed metal.	The area of the fork pocket repaired must be inspected by SBI to ensure the quality of the repair and a quarantine inspector to ensure quarantine compliance.	Operator (Maintenance) SBI Engineer (Repairs)
8	Base Plating	Inspect the Base Plating to ensure the removal of all corrosion and the application of paint is even, without runs. Ensure no surface areas have exposed metal.	The area of the base plate repaired must be inspected by SBI to ensure the quality of the repair and a quarantine inspector to ensure quarantine compliance.	Operator (Maintenance) SBI Engineer (Repairs)
9	Post	Inspect that all the corrosion has been removed and treated.	Ensure the replacement post functions with the twist-lock assembly	Operator
10	Bolt and Wedge Assembly	The bolt can turn in the wedge with a full range of movement	Ensure that the wedge and bolt fit with the twist-lock assembly	Operator

11	Twist-lock Stem	Inspect that all the corrosion has been removed and treated.	Ensure that the twist-lock stem fit with the twist-lock assembly	Operator
12	Leg Stability	Check the legs for stability after installation.	After the leg is installed and fully secured, ensure that the leg does not have any remaining movement or 'Wobble'	Operator

REVISION HISTORY

Date	Version	Summary of Changes	Revised by	Approved by
11 Feb 14	V0-a	Initial document creation		
23 Sept 14	V0-b	Addition of damaged legs warning and changes to permissible payloads		

ANNEXES

A. CROWS Attachment Tech Data

ANNEX A CROWS Attachment Tech Data

1. This annex outlines the rated strength of the following CROWS attachments:
   a. CROWS Ramps
   b. CROWS Claws
   c. Bridge fittings
   d. Double Ended Twistlocks
2. All specifications in this document are applicable when the components listed above, are used in accordance with the operating procedures outlined in this manual.

40 foot CROWS Ramps 179mm high

3. The specifications of the CROWS ramps when operated in accordance with this manual are as follows:
   a. Payloads: For 40 and 20 foot CROWS operation only
   b. Weight: 290

40 foot CROWS Ramps 279mm high

4. The specifications of the CROWS ramps when operated in accordance with this manual are as follows:
   a. Payloads: For 40 and 20 foot CROWS operation only
   b. Weight: 340kg

CROWS Claws V2 (Flatbed Truck and Trailer)

5. The rating of the CROWS Claws are as follows:
   a. Transverse rating: 30,000kgs
   b. Longitudinal rating: 40,000kgs
   c. Lifting hook rating: 500kgs
   d. Weight: 160kgs

CROWS Claws V3 (MAFI Trailer)

6. The rating of the CROWS Claws are as follows:
   a. Transverse rating: 30,000kgs
   b. Longitudinal rating: 40,000kgs
   c. Lifting hook rating: 500kgs
   d. Weight: 180kgs

Bridge Fittings

7. The rating of the bridge fitting used for securing the ramp to the container during loading are:
   a. Tensile force: 10,000kgs
   b. Weight: 3.8kgs

Double Ended twistlocks

8. The double ended twistlocks used for the CROWS have the following load ratings.
   a. Tension: 25,000kgs
   b. Shear: 21,000kgs
   c. Weight: 5kgs